

99D-122

4.5 PSP Cover Sheet (Attach to the front of each proposal)

Proposal Title: Protecting Water Quality in the Sacramento-San Joaquin Watershed
Applicant Name: Community Alliance with Family Farmers (CAFF)
Mailing Address: P.O. Box 363 • Davis, CA 95617
Telephone: (530) 756-8518
Fax: (530) 756-7857
Email: caff@caff.org

Amount of funding requested: \$1,614,270 for 3 years

Indicate the Topic for which you are applying (check only one box):

- Fish Passage/Fish Screens
- Habitat Restoration
- Local Watershed Stewardship
- Water Quality
- Introduced Species
- Fish Management/Hatchery
- Environmental Education

Does the proposal address a specified Focused Action? yes no

What county or counties is the project located in? Fresno, Madera, Merced, San Joaquin, Solano, Stanislaus, Yuba

Indicate the geographic area of your proposal (check only one box):

- Sacramento River Mainstem
- Sacramento Trib: _____
- San Joaquin River Mainstem
- San Joaquin Trib: _____
- Delta: _____
- East Side Trib: _____
- Suisun Marsh and Bay
- North Bay/South Bay: _____
- Landscape (entire Bay-Delta watershed)
- Other: _____

Indicate the primary species which the proposal addresses (check all that apply):

- San Joaquin and East-side Delta tributaries fall-run chinook salmon
- Winter-run chinook salmon
- Late-fall run chinook salmon
- Delta smelt
- Splittail
- Green sturgeon
- Migratory birds
- Other: San Joaquin, Kit Fox and Mountain Plover
- Spring-run chinook salmon
- Fall-run chinook salmon
- Longfin smelt
- Steelhead trout
- Striped bass
- All chinook species
- All anadromous salmonids

Specify the ERP strategic objective and target (s) that the project addresses. Include page numbers from January 1999 version of ERP Volume I and II:

Reduce the concentrations and loadings of contaminants to all major watersheds (Vol I p. 56)
Reduce to acceptable levels the risk of species depletion, extirpation (Vol I p. 67)
Provide incentives for farmers to use farming methods and crop practices favorable to wildlife (Vol I p. 142)

Indicate the type of applicant (check only one box):

- | | |
|--|--|
| <input type="checkbox"/> State agency | <input type="checkbox"/> Federal agency |
| <input type="checkbox"/> Public/Non-profit joint venture | <input checked="" type="checkbox"/> Non-profit |
| <input type="checkbox"/> Local government/district | <input type="checkbox"/> Private party |
| <input type="checkbox"/> University | <input type="checkbox"/> Other: _____ |

Indicate the type of project (check only one box):

- | | |
|-------------------------------------|---|
| <input type="checkbox"/> Planning | <input type="checkbox"/> Implementation |
| <input type="checkbox"/> Monitoring | <input checked="" type="checkbox"/> Education |
| <input type="checkbox"/> Research | |

By signing below, the applicant declares the following:

- 1.) The truthfulness of all representations in their proposal;
- 2.) The individual signing the form is entitled to submit the application on behalf of the applicant (if the applicant is an entity or organization); and
- 3.) The person submitting the application has read and understood the conflict of interest and confidentiality discussion in the PSP (Section 2.4) and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant, to the extent as provided in the Section.

Judith REDMON
Printed name of applicant

Judith Redmond
Signature of applicant

Protecting Water Quality in the
Sacramento and San Joaquin River Watershed
through Biological Farming Outreach and Education

Community Alliance with Family Farmers
Proposal to the
CALFED Ecosystem Restoration Program
April 1999



Judith Redmond, Executive Director
P.O. Box 363, Davis CA 95617
T: (530) 756-8518, extension 13
F: (530) 756-7857
caff@caff.org

Type of Organization: Nonprofit, 501(c)(3)
Tax Identification Number: 94-2914745



page 2

II. Executive Summary

Project Title Protecting Water Quality in the Sacramento and San Joaquin River Watershed through Biological Farming Outreach and Education

Applicant Name Community Alliance with Family Farmers

Project Description

CAFF has developed two educational programs that have proven effective at helping farmers reduce or eliminate the use of organophosphate dormant sprays and decrease the amount of runoff associated with other pesticides and synthetic fertilizers. We operate these programs in seven counties in the Sacramento and San Joaquin River Watershed, where they motivate farmers to implement biological farming practices. The Biologically Integrated Orchard Systems (BIOS) program provides technical support to almond farmers so they can make this shift economically viable. At the same time, our Lighthouse Farm Network (LFN) provides a forum for farmers of many crops to share experiences so they can confidently proceed in the elimination of toxic chemicals.

CAFF is currently receiving CALFED funding for a promotion campaign for biological farming techniques and CAFF programs in the Central Valley as well as direct program support. With this application, we ask CALFED to fund the expansion of our technical assistance programs, BIOS and LFN, in our seven target counties. Great public investment has been made in support of these successful CAFF programs; continued investment is required to ensure the desired benefits on long-term implementation of pesticide reduction techniques by a growing number of farmers.

Ecological/Biological Benefits

The two primary ecological stressors that will be addressed by this project are the negative impacts on aquatic species inflicted by pesticide runoff and nutrient runoff in the form of synthetic nitrogen. The primary ecological/biological objective of the proposed project is to reduce the amount of synthetic pesticides and fertilizers entering the Sacramento and San Joaquin River Watershed, and thus reduce the risk of agricultural, non-point source contamination of these waterways. In addition to overall use reduction, this objective will also be achieved through the use of cover crops, which have been proven to significantly reduce off-site movement of pesticides.

CAFF's hypothesis is that in order for water quality to be protected, both pesticide use and pesticide runoff must be reduced, and that measurable pesticide reduction is achievable through farmer education programs like BIOS and LFN.

In the past, CAFF's programs have been funded by the US-EPA, the State Water Resources Control Board, and the UC Sustainable Agriculture Research and Education Program. These agencies have been supportive of our proven capacity for helping to reduce the contaminant load on Central Valley aquatic environments through offering incentives to farmers. This objective is identified in several parts of CALFED's ERFP.

Technical Feasibility and Timing

Our programs are voluntary, flexible, incentives-based, and farmer-led. This has proven to be a feasible and popular way to approach the issue of pesticide reduction with farmers. Our programs have built up



page 3 momentum and legitimacy in the agricultural community over the last six years. Continued funding at this time is critical to the long-term ecological benefits that widespread implementation of biological farming practices will yield.

Monitoring and Data Collection Methodology

CAFF will assess the environmental benefits of this project through our own monitoring and surveys, and through examination of data collected by state agencies on pesticide loading of the Sacramento and San Joaquin Rivers. CAFF will conduct weekly orchard monitoring of enrolled BIOS orchards to gather data on pest and disease pressure. We will survey enrolled growers about their management practices, conventional and biological, annually. Trends in pesticide use and the use of biological pest controls will be determined through a survey of almond growers statewide. Finally, this project will include a comparative analysis of pesticide use by BIOS growers and a matched set of growers using conventional orchard management practices.

Local Involvement

The participation of local farmers, pest control advisors, farm advisors, researchers and leaders of the agricultural industry is vital to the success of CAFF's objectives. For this reason, we have built a strong public outreach component into each of our programs. Consistent outreach and attention to building relationships within the farming community have resulted in broad based support and involvement in each of our local project areas.

Cost

We are asking CALFED for a total of \$1,614,270 over three years: \$477,981 in year 1, \$608,415 in year 2, and \$527,875 in year 3. The schedule we have set begins in January 2000 and continues through December 2002.

Cost Sharing

The programs in this proposal involve broad cooperation with Cooperative Extension, the University of California, RCDs, the USDA and participating farmers. We estimate that the in-kind contributions to the three-year budget will be a minimum of \$47,250 and that matching funds we hope to achieve through proposals submitted to the State Water Resources Control Board and private foundations will amount to a minimum of \$230,000 over the same period.

Applicant Qualifications

With funding from a variety of leading public and private environmental organizations, including CALFED, CAFF has been operating an array of farmer support programs for the last 20 years. In recent years, CAFF has been recognized for our environmental work through BIOS and LFN. CAFF has consistently led the farming community in promoting and adopting sustainable practices, and we enjoy excellent working relationships with institutions such as the US Department of Agriculture, the US Environmental Protection Agency, UC Cooperative Extension, the Almond Board of California, and many others.

III. Project Description

Geographic Boundaries of the Project

This project will take place in seven counties in the Sacramento and San Joaquin River Watershed. It



page 4 will serve farmers in Fresno, Madera, Merced, San Joaquin, Solano, Stanislaus and Yolo counties, where over 386,000 acres of almonds are grown.

Project Background

CAFF is devoted to protecting the San Francisco Bay Delta by encouraging farmers to implement agricultural practices that reduce overall use of pesticides and their off-sight movement in runoff. We have developed two outreach and education programs that have demonstrated effectiveness in reducing participants' use of organophosphate pesticides, synthetic fertilizers and other surface water and groundwater contaminants. Through direct technical assistance and peer support, these programs get farmers to adopt biologically based farm management practices. Through extensive outreach, the program reaches hundreds of additional farmers and the agricultural community as a whole.

Our Biologically Integrated Orchard Systems (BIOS) program has demonstrated that with intensive technical assistance, almond and walnut growers can and do significantly reduce the use of environmental contaminants. Participants learn how to implement ecologically sound farming methods. The program approach, proven successful by independent research,¹ is based on high quality training in best management practices and consistent, thorough public outreach. The essential elements of this approach are project management teams of local experts, field days, farm visits, field monitoring, technical bulletins and newsletters.

CAFF's Lighthouse Farm Network (LFN) is a statewide farmer-to-farmer information sharing program addressing all aspects of environmentally healthy farm production for a variety of crops. Subjects addressed by the program include pesticide use reduction, water use efficiency, and erosion control. The LFN hosts regular educational events in five agricultural communities in the project area. The LFN is an essential vehicle for grower support in the years following the close of CAFF leadership of the BIOS program in individual project areas. Such a transition is already taking place in Merced, Stanislaus, Yolo and Solano counties, where four-year BIOS projects have already ended.

Over the next three years (2000-2002), we plan to:

1. Coordinate the BIOS program in San Joaquin, Madera and Fresno counties.
2. Coordinate the Lighthouse Farm Network program throughout the project area.
3. Extend public outreach efforts.
4. Monitor and evaluate project impacts.

Proposed Scope of Work

Please refer to Table V, which notes implementation periods for each task.

Task 1: Coordinate the BIOS program in San Joaquin, Madera and Fresno counties

The BIOS program has had projects in San Joaquin and Madera counties since the fall of 1995. Over 100 growers have been enrolled in BIOS, and together they manage approximately 26,000 acres of almonds, about 7 percent of the planted acreage in the project area. Additional years of formal program support will cement the commitment to biological farming made by these growers, and will offer a significant number of new growers the opportunity to adopt BIOS methods. We will expand the

page 5 Modern County BIOS project to include Fresno County almond growers. With this additional recruitment effort, we will extend that project for a full three years. The San Joaquin County project will only continue through 2001 and will coordinate educational events for a UC Biologically Integrated Farming Systems (BIFS) walnut project.

Subtasks:

1.1 Coordinate project management teams

Facilitate regular planning meetings, schedule and coordinate recruitment farm visits, customized farm plans, and biennial farm visits.

1.2 Host regular educational field days

Plan, publicize and facilitate at least four field days per project area per year for enrolled growers and other interested farmers, consultants and researchers. Cover all topics related to biologically integrated almond orchard management at the appropriate time in the growing season.

1.3 Publish program-related technical information

Research, produce and distribute informational fact sheets, a quarterly program newsletter, and a monthly technical bulletin.

Task 1 Deliverables:

- Management team agendas and notes
- Event publicity flyers, sign-in sheets, agendas
- Program fact sheets, *BIOS Update*, and *BIOS Field Notes* evaluation summaries

Task 2: Coordinate the Lighthouse Farm Network program

This program will offer enrolled BIOS growers and non-enrolled growers an additional opportunity to access information on alternatives to pesticides and other aspects of environmentally friendly farm production. Funding is requested for this task from July 2001 through December 2002.

Subtasks:

2.1 Coordinate educational workshops and field days for a variety of crops

Host nine to 12 workshops and field days per year in each of the following agricultural areas: Woodland/Winters, Ripon, Livingston, Modesto and Madera. Extend LFN workshops beyond almonds to include dairy, tomato, grapes and other agricultural systems that have detrimental impacts on Delta tributaries.

2.2 Produce and distribute monthly program newsletter

Summarize each LFN event and distribute this popular information sharing newsletter to LFN participants statewide.

Task 2 Deliverables:

- LFN event announcements and sign-in sheets
- The Foghorn

Task 3: Extend public outreach efforts

Consistent public outreach is key to the widespread adoption of biological farming practices in the almond and other crop industries. CAFF will build relationships and collaborate with individual farmers and agricultural consultants, haulers and processors, the Pest Management Alliance, commodity groups, government agencies, and the University of California.

Subtasks:**3.1 Publicize CAFF's programs and biological farming in general.**

Conduct media outreach in farm communities throughout the project area. Produce direct mail, paid print and radio advertisements. Target crops and agricultural practices that have significant water quality impacts.

3.2 Build relationships with leaders of the agricultural community.

Collaborate on joint projects. Call meetings with relevant leaders to discuss ways that biological farming methods can be promoted, implemented and documented.

Task 3 Deliverables:

- Log of outreach meetings
- Log of publicity

Task 4: Monitor and evaluate project impacts

This project has three distinct monitoring components: field monitoring of enrolled BIOS growers' orchards; surveying enrolled and non-enrolled growers' use of chemical versus biological production practices; and analyzing pesticide use data from the Department of Pesticide Regulation. These elements of the project are described in greater detail in the Monitoring and Data Collection section.

Subtasks:**4.1 Conduct weekly orchard monitoring of all enrolled BIOS orchards.**

Hire field scout consultants for both BIOS project areas to monitor pest and beneficial insect populations and disease throughout the growing seasons.

4.2 Analyze weekly monitoring data.

Compile, analyze and distribute monitoring data in *BIOS Field Notes*.

4.3 Conduct annual BIOS grower survey and program evaluation.

Following harvest, survey each enrolled grower's production practices via an in-depth phone survey. Distribute written program evaluations to all enrolled participants. Compile results of both evaluative tools and publish findings.

4.4 Conduct statewide almond grower survey on production practices.

Survey a random sample of almond growers in ten Central Valley counties to determine perceived reductions in pesticide use and increases in alternative methods. Use survey to establish where growers get information and how they make pest management decisions. Collaborate with UC-IPM, State Water Resources Control Board, the Almond Board of California, and DPR.

4.5 Analyze data from Pesticide Use Reports (PUR).

Hire a consultant to analyze PUR data for project area to determine actual trends in use of diazinon and other chemicals. Compare with results of production practices survey.

Task 4 Deliverables:

- Protocols for orchard monitoring
- Statewide survey results
- Annual Year-End BIOS Reports
- Analysis of 2000-2001 PUR data

Task 5: Project Management

CAFF's Management Team (Communications, Programs, Operations, Development and Executive Directors) will give oversight to planning and directing implementation of different aspects of the

page 7 program, with the Executive Director providing overall project administration.

Subtasks:

5.1 Administer project.

Provide general administrative oversight, planning, training of employees, and orientation of consultants.

5.2 Invoice CALFED for project expenses.

Invoice CALFED monthly for project expenses.

5.3 Report progress to CALFED.

Maintain records necessary to produce accurate quarterly financial and narrative reports. Write quarterly progress reports throughout the project period. Generate financial reports quarterly. Write a final report at the end of the project summarizing accomplishments.

Task 5 Deliverables:

- Monthly invoices
- Quarterly financial and programmatic reports
- Final report

Note: While CAFF firmly believes that the greatest environmental benefits will be achieved through full funding of this project, if funding constraints disallow a full award of funds, we would most highly prioritize tasks 1, 4, 5. Tasks 2 and 3 could wait for 2000 funding without detriment to the overall project.

IV. Ecological/Biological Benefits

Ecological/Biological Objectives

The primary ecological/biological objective of the proposed project is to reduce the amount of synthetic pesticides and fertilizers entering the Sacramento and San Joaquin River Watershed. By promoting practices that reduced both the application rates and runoff of pesticides and fertilizers, the BIOS and LFN programs can help reduce the risk of agricultural, non-point source contamination of waterways in the Bay-Delta ecosystem.

Primary Ecological Stressors

Since 1988, sampling of surface waters in the Sacramento and San Joaquin River Watershed by state and federal agencies has repeatedly found pesticide runoff, particularly following peak periods of agricultural pesticide applications in almond orchards. This was recently demonstrated in a study of the Tubulume River Basin, in which six agricultural pesticides were widely detected in storm runoff.² The contaminants, including diazinon, chlorpyrifos, DCPA, metolachlor and simazine, were specifically linked to runoff from dormant almond orchards. These insecticides are commonly used in conventional almond orchard management to control peach twig borer (PTB), a primary economic pest of almonds. Pease, *et al.* found that almonds use about 22 percent of the diazinon applied annually in California,³ and a study by the Department of Pesticide Regulation found that diazinon exceeded the California Department of Fish and Game's suggested criterion of acute toxicity for the protection of freshwater life in about 56 percent of the samples.⁴

While more study needs to be done on the specific links between pesticides and the species identified as priorities by CALFED, a recent research survey found that long-term exposure to certain pesticides in salmonid habitat can decrease salmon's ability to swim, thus reducing its abilities to feed, flee predators,

and maintain position in the river system. Further, the study found that adult salmon attempt to avoid contaminated water, which may disrupt their spawning schedule.

Nitrate runoff in the form of synthetic nitrogen is the second ecosystem stressor addressed by this project. This nitrogen can be associated with low dissolved oxygen and can degrade the water as well as creating fish migration barriers.

CARF's Hypothesis

In order for water quality to be protected, both pesticide use and pesticide runoff must be reduced, and that measurable pesticide reduction is achievable through farmer education programs like BIOS and IPN.

BIOS versus Alternative Approaches

The BIOS approach offers a way for almond growers to obtain satisfactory yields while reducing the negative environmental impacts associated with conventional production methods. CARF teaches farmers how to substitute pesticides and synthetic nitrogen with a whole-systems approach to controlling pests and boosting fertility. The specific techniques BIOS promotes were originally developed beginning in 1998 by innovative almond growers in cooperation with a UC Cooperative Extension Farm Advisor.¹ They include seeded cover crops, elimination of broad spectrum pesticides, aggressive release of beneficial insects, applications of compost, leaf tissue and soil sampling, and weekly orchard monitoring. Together these methods build soil rich in organic matter, which increases soil water holding capacity, therefore reducing surface runoff. The BIOS program offers a unique approach to protecting watersheds. Quite simply, the only alternative being promoted to farmers—conventional agriculture—does not address the impacts it inflicts on the ecosystem.

Cover crops are a central component to management practices promoted in the BIOS program. The use of cover crops in BIOS orchards is promoted through field days focusing on establishment and management of cover crops, a cover crop fact sheet that is distributed widely, chapters in the book *BIOS for Almonds*, monthly articles in the BIOS newsletter *Field News*, and farm visits by the BIOS management team.

Cover crops have been shown to significantly reduce runoff pesticides in a study by DPR.² They state, "Mass runoff of insecticides in vegetative rows [cover crop] was reduced by as much as 74 percent over non-vegetated rows." Additionally, "For all three insecticides [chlorpyrifos, diazinon, methidathion], cover crops were effective for reducing runoff compared to planting no cover crop between the rows." BIOS promotes the use of cover crops, which can help reduce the runoff of pesticides.

Expected Benefits

The primary anticipated project benefit is the reduction of the use of pesticides that have been shown to degrade water quality and threaten aquatic species. In 1997, 96 percent of enrolled BIOS growers completely eliminated the use of organophosphate dormant spray, a 6 percent increase over 1996. Instead of applying a dormant spray, BIOS growers controlled peach twig borer with an application of the biological control *Bacillus thuringiensis*. Moreover, 98 percent of enrolled growers managed ground cover. Managing ground cover can prevent soil erosion, and in the process trap contaminants such as other pesticides and herbicides, preventing movement as surface runoff into streams and rivers.

As we reach out to new growers we expect to see similar reductions in organophosphate use and comparable adoption of cover crops. We are confident in our ability to produce results like these because every year since the BIOS program began in 1993, enrolled growers have reduced or eliminated their use of synthetic pesticides and fertilizers and have consistently planted cover crops. Independent research by the California Institute of Rural Studies found that "uniformly, BIOS orchards report a significantly lower proportion of fields treated with registered pesticides" compared with a control group. Further, in comparing pre-BIOS pesticide use with use during the program, the study found that almond BIOS growers "report a steady decrease in the intensity of pesticide use ... and in their usage of all registered materials, as compared with prior years."⁸

Secondary benefits will include:

- *reducing the use of synthetic nitrogen* by at least 50 percent among enrolled growers, compared with pre-program usage;
- *reducing air pollution* from aerially applied pesticides, air-born particulate matter, and burned orchard prunings;
- *potentially avoiding the need for additional storage and conveyance systems* by investing now in water quality and efficient use, and
- *finding new ways to reduce pesticide use* by stimulating the research and extension community.

Third party benefits: By improving water and air quality in the Sacramento and San Joaquin valleys, this project will improve the quality of life in rural communities. This project will also result in a marked increase in on-farm wildlife habitat, benefiting many species.

Durability of Benefits

One way to measure the success of the BIOS and LFN programs is by the level of long-term adoption of biological farming techniques. Our experience leading these programs has demonstrated that an enduring commitment to pesticide reduction requires intense education and support throughout the experimental period. Once farmers have acquired sufficient experience with the methods to gain confidence in their effectiveness, durable benefits are assured. Over and over, farmers who have achieved this confidence have made comments like this to CAFF: "I never thought I'd say this, but these methods work even better than my old ways. I wouldn't go back to hard pesticides now even if you paid me."⁹

We have determined that continued technical assistance is necessary to assure that those farmers who have recently been introduced to biological farming methods are able to successfully adopt them to provide long-term environmental benefit. Though many conventional farmers are beginning to implement biological farming practices, much work remains. The majority of farmers continue to rely on pesticides that degrade water quality.

Linkages

Past Funding

CAFF has received state and federal funding for the BIOS program since its inception in 1993. The US-EPA, the California State Water Resources Control Board, the Bay Delta Accord and the USDA/Sustainable Agriculture Research and Education have all been major funders, together investing \$1.2 million in the program. Private foundations have contributed another \$571,000 to the program's



page 10 success. The proposed project builds on the strong public/private partnership the BIOS program has created in previous phases.

Current Status

In January 1998, CAFF was awarded a three-year CALFED contract supporting BIOS and LFN in three counties and coordinating a publicity campaign promoting biological farming. The proposed project represents the next phase of this current project. Funding for the BIOS aspect of the program ends in December 1999. No further funding for BIOS has yet been secured. CALFED's current support of the LFN continues through the end of our current project, June 2001.

One of CAFF's goals is to shift the almond and walnut industries away from reliance on synthetic pesticides. Meeting this goal will require a long-term public investment. The preventative approach to ecological health is far more efficient and cost effective than is clean up. CAFF has made great strides: we have taken a viable model for biological nut production and found the means to adapt it on over 10,000 acres. As a result of CAFF's educational programs, biological farming methods are gaining increasing legitimacy among Central Valley farmers.

Links to Future ERP Actions and Goals

CAFF's proposed project will help CALFED meet the goals and strategic objectives outlined in the Ecosystem Restoration Program Plan (ERPP) (February 1999 Revised Draft). First, in the Visions for Reducing or Eliminating Stressors, Contaminants (Vol. 1, pp. 501-509), the ERPP names the strategic objective of "reducing the concentrations and loadings of contaminants in all aquatic environments in the CALFED region." (p. 506) This aim is echoed in the Restoration Targets and Programmatic Actions on the ecological stressor of contaminants for the Sacramento River Ecological Management Zone. The ERP notes, "The implementation objective is to reduce concentrations and loading of contaminants in the aquatic environment and the subsequent bioaccumulation by aquatic species. Reducing contaminants would increase survival of aquatic species and eliminate public health concerns from accumulation of toxins in tissues." (Vol. 2, p. 192) *CAFF's BIOS program has demonstrated effectiveness in reducing use of pesticides known to contaminate aquatic environments.*

The same section of the ERPP-Volume I lists another strategic objective of "reducing to acceptable levels the release of oxygen-depleting substances into aquatic systems throughout the CALFED region." (p. 507) *Participants in the BIOS program have consistently reduced their use of synthetic nitrogen, an oxygen-depleting contaminant, by over 50 percent, in many cases by 100 percent. Further, our LFN program is beginning to work with dairy farmers in the San Joaquin Valley to explore ways for reducing nitrogen runoff associated with confinement farm operations.*

Third, as part of the Habitat Vision section, the ERPP names the following short-term strategic objective for Agricultural Lands: "To provide incentives to farmers to use farming methods and crops that are favorable to wildlife." (Vol. 1, p. 174) *Both the LFN and BIOS programs educate farmers about increasing on-farm habitat for wildlife and beneficial insects. We do this through workshops on planting and maintaining hedgerows, planting and managing cover crops, and attracting owls and other raptors to the farm. In general, by using biological farming practices, CAFF growers are enhancing the environment for land and water species affected by their practices.*

page 11 **System-Wide Ecosystem Benefits**

By reducing the negative impacts of non-point source pollution on fish and migratory birds, this project complements and enhances all other CALFED projects with the aim of restoring protected species.

Compatibility with Non-Ecosystem Objectives

CAFF's programs complement CALFED's objectives toward water quality, water use efficiency, and water supply reliability. Use of biological farming practices protects water quality, which has benefits for all aspects of use (i.e. human consumption, recreation, environmental, etc.). Enhanced quality has a positive impact on the reliability of water supplies. Additionally, CAFF's programs promote increased efficiency of agricultural water usage through several vectors; for example, increasing organic matter in the soil through compost and cover crops gives the soil greater capacity for water retention.

V. Technical Feasibility and Timing

CAFF's past experience working with government contracts and coordinating the BIOS and LFN programs leads us to believe that the proposed scope of work, timelines and budget are realistic and appropriate. The programs have established their technical feasibility through success in recruiting growers and helping them successfully implement water quality-enhancing farming practices.

BIOS growers repeatedly tell us that the approach we have taken in making the program voluntary, flexible, incentives-based, and farmer-led is a key part of its success. Growers who join the program retain full control over what practices they choose to implement. According to enrolled growers, the most attractive incentive is the customized technical assistance offered by the project management team. CAFF is careful to create a "co-learning" environment among program participants and project leaders, where farmers' expertise is honored equally with researchers'. Such parity is not often found in farmer education programs, where the top-down approach—researcher to farmer—is more common.

As a voluntary program, BIOS is aligned with the goals of the DPR's Dormant Spray Water Quality Program (DSWQP), through which DPR seeks to prevent organophosphate pesticide residues from contaminating the Sacramento and San Joaquin Rivers. The DSWQP promotes voluntary efforts to prevent aquatic toxicity, with the understanding that DPR will implement increased regulations if monitoring demonstrates that voluntary efforts are not meeting compliance with the water quality standard.

Our experience with large government contracts ensures that we will be prepared to begin expending the funds as soon as the contract is signed. In fact, the greatest danger for this project is a lag in funding. BIOS and LFN are ongoing programs that have built up momentum in the farm communities in which we work. Our reputation rests, in part, on the availability of our staff and the constancy of our educational events and publications. Continued funding for the next phase of the program is of critical importance. Should the program dissolve before interested growers have acquired sufficient experience with biological farming techniques to implement them on their own, the strides gained through past public investment in the program could be lost. Moreover, over the past six years the concept of biological farming has earned new legitimacy among almond growers. We are now

beginning to reach more conventional growers—those who were reluctant to try the approach when it was perceived as “radical.” CAFF believes that continued public support will result in a significant new number of growers adopting the practices and reducing their use of dormant sprays and synthetic fertilizers.

Neither environmental compliance documents nor permits are required for this project. We do not anticipate any impact on the proposed project schedule due to regulations or ordinances.

VI. Monitoring and Data Collection Methodology

As briefly stated in the project description section, this project will be monitored in many ways. Several state and federal programs monitor the concentrations and amounts of pesticides in the Sacramento and San Joaquin Rivers already exist, including the DPR's Dormant Spray Water Quality Program, USGS's National Water Quality Assessment Project, and the UC-Integrated Pest Management Program. These programs are described in Table 1. While CAFF is not directly involved in this level of watershed monitoring, the results of this research are important to determining the overall level of effectiveness of voluntary pesticide reduction efforts.

CAFF will be leading four other types of monitoring and data collection directly related to this project, also described in Table 1. First, we will collect and analyze weekly insect and disease data from all BIOS orchards. CAFF will extend our sub-contract with existing independent field scout Kerry Washenko (Madera and Fresno counties) and Steve Truda (San Joaquin County) who will set up pest data collection systems in each orchard and monitor them on a weekly basis from March through October each project year. This data will be compiled by CAFF, monitoring staff and distributed to enrolled growers in BIOS Field Notes. In-season monitoring helps growers determine actual pest pressure and help justify the decision to eliminate an organophosphate spray during the dormant season.

Our second method of data collection will be annual grower surveys and evaluations. At the end of each growing season since 1993, we have conducted a phone survey regarding enrolled growers' practices (implementation of biological farming methods, use of registered pesticides, use of synthetic versus organic methods of fertility management, etc.) and a written evaluation that measures grower satisfaction with the program. Results of the survey will be compiled, analyzed and published in Year End BIOS Reports for each project year.

Thirdly, we will participate in a collaborative survey of almond growers statewide. We are presently planning for a similar study, and are collaborating with UC-IPM, DPR, and the Almond Board of California. A follow-up study will be conducted at the end of the 2001 growing season. A random sample of the 6,000 almond growers statewide will be asked about their use of pesticides and/or biological practices, and the sources of information they look to when making farm management decisions.

Finally, CAFF will cooperate with an independent data analysis firm to analyze data from DPR's Pesticide Use Reports. The study will be similar in scope and direction to “How Effective are Voluntary Agricultural Pesticide Use Reduction Programs?” published by California Institute of Rural Studies, and will compare pesticide use and farm management practices on BIOS orchards with a set of matched, conventionally managed orchards.

page 13 Together these monitoring and data collection tools will provide comprehensive data on:

- what quantities of pesticides are present in river water
- what concentrations and amounts of pesticides leave orchards as runoff
- what pesticides BIOS growers use
- how BIOS growers' pesticide use compares to conventional cohorts and the county average
- what quantities of pests are present in BIOS orchards and how much damage they cause
- what biological farming practices BIOS growers implement

VII. Local Involvement

Local involvement is integral to the success of CAFF's programs. As education and outreach programs, both BIOS and LFN measure their success in part by their ability to attract the participation of new community members. Consequently we give a great deal of attention to public outreach through a multifaceted strategy of one-on-one relationship building, promotion through the media, direct mail, event publicity, and public presentations. Every month people ask to be added to our mailing lists, demonstrating the success of our outreach efforts. Over the last four years, for example, the BIOS data base has grown from 677 names to 3,154.

The proposed project includes a task specifically about public outreach that will continue to expand our current efforts to generate local involvement in our programs (see Project Description, Task 4). Throughout the project area, CAFF will conduct outreach to generate interest in the project from the following groups:

- growers
- UC researchers and farm advisors
- NRCS conservationists
- processors
- RCD board members
- pest control advisors
- agricultural business people
- commodity board members

Over the past six years, CAFF has been building relationships with these groups and has encountered varying levels of interest and support. More and more, we see signs of CAFF's acceptance as an established part of the agricultural landscape. Recent examples include being invited to participate in the DPR-sponsored almond and walnut Pest Management Alliance projects, co-sponsoring a farm field day with the Yolo County RCD, and being asked to give presentations about biological farming to mainstream audiences including industry trade shows, and UC Davis and Modesto Junior College students.

CAFF is proactive about involving local agricultural leaders to participate in our programs. We invite UC researchers and farm advisors, and NRCS conservationists to give presentations at our educational field days. We also ask farm suppliers to demonstrate new equipment at our field days, such as chippers and shredders that transform orchard brush into mulch, a soil amendment.

Another branch of our strategy for increasing public involvement in biological farming is exemplified in the trainings we conducted last year for personnel from the University of California and the Natural Resources Conservation Service. We created two workshops designed specifically to give these agricultural professionals a broader understanding of the concepts of sustainable agriculture, with an emphasis on spring and fall practices in tree and vine crops. As in regular BIOS field days, the workshops included hands-on activities and cooperative problem solving. The approach was popular.

page 14 with participants, one of whom told CAFF staff several months later, "The information and tools offered at these workshops are useful in our day-to-day work. We use the course materials regularly to provide clients with information on sustainable production practices." Training agricultural professionals in biological farming techniques is important because farmers often go to governmental natural resource agencies or cooperative extension for advice on sustainable farm management practices. Unfortunately, many such professionals have not received training in these practices and thus are not well prepared to help implement more sustainable systems. CAFF considers these workshops to be an important example of our work to institutionalize sustainable agriculture in the Central Valley.

VIII. Cost

Budget

The budget represented in Tables II and III represents CAFF's experience in creating and administering similar projects for the last five years as well as research that has taken place in recent weeks. The budget has been designed to take advantage of the expertise of existing staff.

The salient assumptions of this budget include:

1. An annual inflator of 5% has been applied to all salaries.
2. Overhead and indirect costs are 13% of the budget overall and 22% of direct salary overall.

Overhead includes general management oversight, accounting and other professional services, staff training, equipment maintenance, rent in the main Davis office, payroll services, insurance, the cost of replacing general office equipment, depreciation and interest.

Table II presents a three year budget, by task. Table III presents the budget on a quarterly basis. As described in the section on Cost Sharing, the CALFED portion of the project budget is much smaller in 2002 because we hope to raise matching funds from other sources (Table IV).

Schedule

The starting and ending dates for each task and subtask are delineated in the attached schedule (Table V); "milestones" are noted as "deliverables" in the Project Description above.

Should incremental funding of the project be necessary, the financial priority is to make funding for the year 2000 available. CAFF will seek funding from other sources for subsequent years but in order to maintain the confidence of the growers we have reached, and ensure that they continue to implement biological farming methods, it is imperative that CAFF maintain a strong programmatic presence in the Central Valley in 2000.

IX. Cost Sharing

The programs described in this proposal involve extensive collaboration with Cooperative Extension, the University of California, Resource Conservation Districts, the USDA and farmers. While CAFF has not previously tracked the in-kind hours that are donated to the LFN and BIOS programs, we plan to begin doing so in 2000. We currently estimate that the in-kind contributions to the budget will be a minimum of \$47,250 over the three years of the project. (See Table IV)



page 15 While CAFF has not yet secured matching funds for the projects described in this proposal in the target counties, we will be focusing on securing matching funds for 2001 and 2002. Proposals will be submitted to the State Water Resources Control Board in 1999, and several private foundations in 2000. We estimate that a minimum of \$50,000 will be raised in matching funds for 2001 and \$200,000 for 2002. (See Table IV.)

X. Applicant Qualifications

CAFF is a 501(c)(3) membership based organization working in many of California's agricultural regions. Like our membership, our Board of Directors consists of a cross section of farmers and environmentalists representing rural and urban areas. Our 1999 budget of \$1.5 million supports the work of 36 full and part-time staff located in Davis, Fresno, Modesto, Sonoma and Santa Cruz.

CAFF has worked with farmers on environmental quality protection issues for 20 years. Over that time we have won farmers' support through our commitment to offering incentives for pesticide reduction while also addressing economic concerns. Our programs are respected in the farm community for their capacity to offer practical information in an environment that reflects farmers' preferred ways of learning. We are known for our capacity to identify and promote new methods for addressing farm-related environmental issues within a whole systems context. As a matter of course, then, we encourage farmers to adopt practices that achieve multiple benefits. Cover crops are a good example: they reduce soil erosion, pesticide run off, and the needs for irrigation and synthetic fertilizers. At the same time they provide habitat for beneficial insects, are cost efficient, and have the added social benefit of being beautiful.

Our overall strategy centers around creating collaborative relationships with all the stakeholders for a particular issue. Our work to improve water quality, and to ensure that third party impacts on water policy are recognized, earned us a seat on the Bay Delta Advisory Council. (Please see the attached "Disclosure of Remote Interest for Key Personnel.") In addition, CAFF staff, board, and volunteers serve as leaders in state and local forums including both public and industry organizations, such as DPR's Pest Management Advisory Committee, the walnut and almond Pest Management Alliances, and the Almond Board Research Subcommittee.

This project will work in ongoing collaboration with almond researchers and extension agents from the University of California. Additional breadth of skill and expertise will be incorporated through the involvement of:

- government regulators
- independent pest control advisors
- irrigation specialists
- personnel from agencies such as NRCS and the Air Quality Control Board
- meteorologists
- professors from junior colleges
- agricultural business people

CAFF's Staff Structure

Administration of this project will be overseen by CAFF's executive director. Our program and communication directors will give direction to specific aspects of the project, both of whom report to the executive director. The program director will be responsible for the BIOS and LEN components. The communications director will give direction to the public outreach and expanded information services elements. Finally, the controller will oversee the bookkeeping and financial management.

page 16 aspects of the project. Other essential staff are the BIOS and LFN program coordinators, who are responsible for day-to-day management of their respective programs. These staff report to the program director.

Biographical Sketches of Key Staff

Judith Redmond, Executive Director

Ms. Redmond has served as CAFF's Executive Director from 1989-1996, during a period of exponential growth in programs and budget, and resumed the office in 1998. She is providing administrative and strategic oversight for CAFF's current CALFED project. Ms. Redmond is a partner and co-owner of Fall Belly Farm, a 170 acre certified organic farm selling vegetables, fruits and walnuts. Prior to her tenure at CAFF, Ms. Redmond conducted research into implementation of reclamation law in Westlands Water District for the California Institute for Rural Studies. She is the author of *Troubled Waters - Troubled Lands*, 1989 and co-author of *Missed Opportunities - Squandered Resources*, 1988, and *Economic conditions in the farming and food processing industries, West San Joaquin Valley*. Ms. Redmond is an appointed member of the Bay Delta Advisory Council (BDAC), a member of the Board of Directors of the Bio Integral Resources Center (BIRC) and the Treasurer of the Center for Urban Education About Sustainable Agriculture.

Jill Klein, Program Director

Jill Klein began working for CAFF in 1992 as the Lighthouse Farm Network statewide coordinator. Ms. Klein was also a founding management team member and coordinator of the Biologically Integrated Orchard Systems program. Since 1996, she has served in the capacity of program director, in which she provides program direction and oversight for CAFF's chapters, LFN, BIOS, and policy programs. Additionally, Ms. Klein serves on the Pest Management Advisory Committee of the Department of Pesticide Regulation, and the Biologically Integrated Farming Systems Advisory Board of the UC Sustainable Agriculture Research and Education Program. Ms. Klein holds a Master of Science in International Agricultural Development from UC Davis. She has done research on warm and cool season cover crops and their role in conventional vegetable crop rotations in Central Valley and coastal agriculture in California.

Thomas Nelson, Communications Director

As communications director, Thomas Nelson oversees CAFF's media relations, publications and public outreach, including management of the Biological Farming Promotion Campaign. Since joining the organization in 1992, Mr. Nelson has worked as a water policy analyst, editor of the *Agrarian Advocate*, the first coordinator of the BIOS program, and as program director. Prior to joining CAFF, he worked as a farmer in Northern California. Mr. Nelson holds a B.A. in anthropology from Grinnell College.

Marcia Gibbs, BIOS Program Coordinator

Marcia Gibbs has been working with CAFF's BIOS program since 1996. As program coordinator, she is responsible for the supervision of BIOS staff, overall program coordination, and written program reports and program evaluation. Ms. Gibbs also promotes the BIOS program to the agricultural community, farmers and researchers. She has been a family farmer on a rice ranch in the Sacramento Valley. Ms. Gibbs has a Master of Business Administration degree and a secondary teaching credential.

page 17 *Reggie Knox, LFN Program Coordinator*

Reggie Knox has worked on sustainable agriculture and land management issues for 18 years. He came to CARF in 1994 to coordinate legislative efforts and outreach for the BIOS program and has coordinated the statewide Lighthouse Farm Network program since 1996. Mr. Knox is County Supervisor Jan Beutetz' appointee to the Santa Cruz County Resource Conservation District Board of Directors. He worked for eight years with the California Certified Organic Farmers developing national organic standards and inspecting farms throughout the Central Coast and the Central Valley.

XI. Attachments

Table I: Monitoring and Data Collection Information
Table II: Three Year Budget
Table III: Quarterly Budget
Table IV: Cost Sharing & In-Kind Contributions
Table V: Project Schedule
Nondiscrimination Compliance Statement
Small Business Preference Statement
Application for Federal Assistance (SF 424 B)
Disclosure of Remote Interest for Key Personnel
Copies of Notification Letters to Boards of Supervisors
1997 Year End Almond Survey Analysis
BIOS Project Map
LFN Meetings Map
Media Clipping
The BIOS Update
BIOS Field Notes
The Foghorn

XII. Endnotes

1. D. Villarejo and C. Moore. How effective are voluntary agricultural pesticide use reduction programs? California Institute for Rural Studies, Davis, CA, 1998.
2. Pesticides in storm runoff from agricultural and urban areas in the Tuolumne River basin in the vicinity of Modesto, California. US Geological Survey, 1998.
3. Pease, et al. Pesticide use in California: Strategies for reducing environmental health impacts. California Policy Seminar, April 1996, Vol. 8, #4. Contact: (510) 642-5514.
4. Ross, et al. Distribution and mass loading of insecticides in the San Joaquin River, California. State of California: Department of Pesticide Regulation, 1997. EH96-02.
5. Ewing, R.D. Diminishing Returns: Salmon Decline and Pesticides. Oregon Pesticide Education Network, 1999. Contact <http://www.pond.net/~fish.tiff/salpest.pdf>

- page 18
6. Ross, et al. Reducing dormant spray runoff from orchards. State of California: Department of Pesticide Regulation. 1997. EH 97-03. Contact L. Ross at (916) 324-4116 or email lross@cdpr.ca.gov
 7. L. Hendricks. Almond growers reduce pesticide use in Merced County field trials. California Agriculture. Jan-Feb, 1995. pp. 5-10.
 8. D. Villarejo and C. Moore. How effective are voluntary agricultural pesticide use reduction programs? California Institute for Rural Studies. Davis, CA. 1998. p. 24.
 9. Ross, et al. Distribution and mass loading of insecticides in the San Joaquin River, California. State of California: Department of Pesticide Regulation. 1997.
 10. BIOS for Almonds: A Practical Guide to Biologically Integrated Orchard Systems Management. Published by Community Alliance with Family Farmers and the Almond Board of California. 104 pages.

Table I. Monitoring and Data Collection Information

| 1) Biological/Ecological Objective | | | |
|--|--|---|---|
| <p>Determine the amounts and sources of organophosphate insecticides in the Sacramento and San Joaquin Rivers. This part of the table summarizes existing data collection efforts. This data collection is closely allied with the CAPP proposal but is not work proposed by CAPP.</p> | | | |
| Hypothesis/ Questions to be Evaluated: | Monitoring Parameters and Data Collection Approach | Data Evaluation Approach | Comments/Data Priority |
| What concentrations and amounts of pesticides are present in river water? | This is a watershed level study that samples river water and analyses for pesticides. Two sites on the Sacramento and two on the San Joaquin are being sampled twice each week in the winter months from 1997 to 2001. | Compare measurements to established criteria for the particular pesticide's toxicity. | This project is executed and funded by DPR's Dormant Spray Water Quality Program. Contact Lisa Ross (916) 324-4116 or lross@cdpr.ca.gov |
| What concentrations and amounts of pesticides are present in river water? | This is also a watershed level study, focusing on the Sacramento River Watershed, that samples river water and analyses for pesticides, among other water quality factors. Two sites, Sacramento River at Colusa and the Sacramento River at Freeport, will be monitored until 2004. | Compare measurements to established criteria for the particular pesticide's toxicity. | This project is executed and funded by USGS's NAWQA project. See www.rvares.er.usgs.gov/nawqa/nawqa_home.html |
| What concentrations and amounts of pesticides leave orchards as runoff? | This is an orchard level study with experimental orchards near Livingston and Arbuckle. The pesticide concentration in runoff from these orchards will be compared under four systems: organophosphate use, pyrethroid use, spinosad use, and no pesticide use. | Using standard statistical models and experimental design, the four methods will be compared. | This project is executed by the UC IPM program and was originally initiated by the State Water Resources Control Board (SWRCB), and current funding is from CALFED. Contact Michael Oliver (530) 752-7992 or moliver@ucdavis.edu |

Table I. Monitoring and Data Collection Information, CAPP

2) Biological/Ecological Objective

Reduce the amounts and sources of organophosphate insecticides in the Sacramento and San Joaquin Rivers through the promotion of biological farming as advocated by the BIOS program.¹⁰ The data collection efforts summarized in this table are proposed work to be completed by CAFF.

| Hypothesis/ Questions to be Evaluated | Monitoring Parameters and Data Collection Approach | Data Evaluation Approach | Comments/Data Priority |
|--|--|--|---|
| What pest and fertility levels occur in BIOS orchards? | In-season monitoring (Subtasks 4.1 and 4.2) including July leaf tissue nitrogen, soil sampling, mite and aphid counts, peach twig borer and navel orange worm monitoring. Notes on diseases, beneficial insects and habitat, and other monitoring notes. | Orchards are visited once a week to check for pest and collect fertility samples. A standard data collection sheet in carbon copy triplicate is used for each visit. One copy is given to the grower for their own use, one copy is kept by the field scout, and a third is forwarded to the CAFF office for input into an Excel spreadsheet. Summaries of this data are mailed to all growers in the newsletter <i>Field Notes</i> . See Summary of Data Evaluation Approach below. | This part of the BIOS program is critical to its effectiveness. Face to face contact with growers; helping them use biological farming techniques, is used to introduce the farmers to the benefits of independent PCAs as opposed to chemical company employed PCAs. The <i>Field Notes</i> summaries also let growers know what is happening in other BIOS orchards, letting them know that they are not alone. |
| What pesticides do BIOS growers use? | Year end surveys (Subtask 4.3). The BIOS year end surveys include questions on pesticide use along with other questions. | Each enrolled grower is interviewed by phone and asked approximately 65 questions. Answers are input into Excel spreadsheets. See Summary of Data Evaluation Approach below. | This data has three uses: 1) demonstration of pesticide use reduction, 2) targeting those growers who continue to use broad-spectrum pesticides for additional assistance 3) placement of growers into groups according to pesticide usage. Harvest results are then compared between groups to statistically test the effectiveness of alternative reduced pesticide practices. |
| What pesticides are used by almond growers statewide, what biological farming practices are used, and what sources of information are used for making production management decisions? | Statewide almond grower survey (Subtask 4.4) supplemented by PUR data. | A representative sample of growers will be surveyed. See Summary of Data Evaluation Approach below. | This survey will be used to compare the use of biological farming techniques and information sources between BIOS growers and other conventional growers. |

Table I: Monitoring and Data Collection Information, CAFF

| | | | |
|--|--|--|---|
| How do BIOS growers' pesticide use compare to a conventional cohort and the county average? | This project will analyze PUR data from (Subtask 4.5) | See Summary of Data Evaluation Approach below. | A similar project is currently being executed by CAFF's BIOS program and the California Institute for Rural Studies (CIRS). The project is currently funded by CALFED and will analyze pre-2000 data. The proposed work will analyze data from 2000 and 2001. |
| How much damage is caused by pests in BIOS orchards? How does this damage compare to the county average? | Harvest crackout and year end surveys (Subtask 4.3) | Yield in pounds per acre and percent damage from BIOS orchards are compared statistically to county averages. See Summary of Data Evaluation Approach below. | Comparison of BIOS versus county average harvest results are given very high priority. We must ensure that the BIOS program recommends reduced pesticide practices that work and are economically viable. |
| How many growers attend BIOS field days? | Tabulated attendance lists from field days, report the size of mailing list. | Attendance and mailing list data are kept separate from the scientific monitoring database. A File Maker Pro database file, in use since 1993, is always kept updated. | Tracking the numbers of farmers that receive materials and attend events is the primary method to determine how many farmers we reach with reduced pesticide use information and support. |

Summary of Data Evaluation Approach

All scientific monitoring and survey data is input into Excel spreadsheets files. Data structure is designed and data entry supervised by the BIOS Staff Scientist, a Ph.D. trained in data manipulation and statistical analysis. The BIOS Staff Scientist uses the SAS statistical programming language for all data summaries and statistical comparisons. BIOS contracts with the UC Davis, Division of Statistics, for additional help with complex designs. Assistance is also supplied by University Ag Economists, UC SAREP (Sustainable Agriculture Research and Education Program) personnel, UC Coop Extension Farm Advisors, and professors from the UC Davis Pomology Department. Data is kept accessible to everyone, even those without SAS programming experience, because front-end data input is in Excel. Extensive comments and notes are included with each Excel file.

Table E Monitoring and Data Collection Information; CAFF

TABLE II: Three Year Budget

| Task | Direct Labor Hours | Direct Salary & Benefits | Service Contracts | Materials & Acquisition Costs | Miscellaneous & Other Direct Costs | Overhead & Indirect Costs | Total Cost |
|-------------------------|--------------------|--------------------------|-------------------|-------------------------------|------------------------------------|---------------------------|------------------|
| 1.1 | 9,499 | 130,894 | 80,000 | | 30,375 | 32,724 | 273,993 |
| 1.2 | 9,499 | 130,894 | | | 20,375 | 32,724 | 183,993 |
| 1.3 | 5,291 | 83,327 | | 9,000 | 32,500 | 20,832 | 145,659 |
| Total Task 1 | 24,289 | 345,115 | 80,000 | 9,000 | 83,250 | 86,279 | 603,644 |
| 2.1 | 4,011 | 69,410 | 3,600 | 3,000 | 17,650 | 17,353 | 111,013 |
| 2.2 | 2,856 | 47,192 | | 3,000 | 13,420 | 11,753 | 75,410 |
| Total Task 2 | 6,867 | 116,602 | 3,600 | 6,000 | 31,070 | 29,151 | 186,423 |
| 3.1 | 4,494 | 87,221 | 30,000 | 2,500 | 48,000 | 21,805 | 189,526 |
| 3.2 | 531 | 18,915 | | 1,500 | 10,500 | 4,729 | 35,644 |
| Total Task 3 | 5,025 | 106,136 | 30,000 | 4,000 | 58,500 | 26,534 | 225,170 |
| 4.1 | 2,745 | 42,490 | 60,000 | | 3,933 | 10,623 | 117,046 |
| 4.2 | 6,611 | 103,002 | | | 3,933 | 25,751 | 132,686 |
| 4.3 | 2,745 | 42,490 | | | 3,933 | 10,623 | 57,046 |
| 4.4 | 40 | 1,400 | 20,000 | | | 350 | 21,750 |
| 4.5 | 80 | 2,800 | 60,000 | | | 700 | 63,500 |
| Total Task 4 | 12,221 | 192,182 | 140,000 | 0 | 11,799 | 48,046 | 392,027 |
| 5.1 | 2,682 | 56,275 | | | 3,500 | 5,628 | 65,403 |
| 5.2 | 5,268 | 67,591 | | 2,500 | 3,500 | 6,759 | 80,350 |
| 5.3 | 4,368 | 52,504 | | | 3,500 | 5,250 | 61,254 |
| Total Task 5 | 12,318 | 176,370 | 0 | 2,500 | 10,500 | 17,637 | 207,007 |
| Total, All Tasks | 60,720 | 936,405 | 253,600 | 21,500 | 195,119 | 207,646 | 1,614,270 |

| TABLE II: Three Year Budget | | | | | | | |
|------------------------------------|---------------------------|-------------------------------------|--------------------------|--|---|--------------------------------------|-------------------|
| Task | Direct Labor Hours | Direct Salary & Benefits | Service Contracts | Materials & Acquisition Costs | Miscellaneous & Other Direct Costs | Overhead & Indirect Costs | Total Cost |
| 1.1 | 9499 | 130,894 | 80,000 | | 30,375 | 32,724 | 273,993 |
| 1.2 | 9499 | 130,894 | | | 20,375 | 32,724 | 183,993 |
| 1.3 | 5291 | 83,327 | | 9,000 | 32,500 | 20,832 | 145,659 |
| Total Task 1 | 24,289 | 345,115 | 80,000 | 9,000 | 83,250 | 86,279 | 603,644 |
| 2.1 | 4,011 | 69,410 | 3,600 | 3,000 | 17,650 | 17,353 | 111,013 |
| 2.2 | 2,856 | 47,192 | | 3,000 | 13,420 | 11,798 | 75,410 |
| Total Task 2 | 6,867 | 116,602 | 3,600 | 6,000 | 31,070 | 29,151 | 186,423 |
| 3.1 | 4,494 | 87,221 | 30,000 | 2,500 | 48,000 | 21,805 | 189,526 |
| 3.2 | 531 | 18,915 | | 1,500 | 10,500 | 4,729 | 35,644 |
| Total Task 3 | 5,025 | 106,136 | 30,000 | 4,000 | 58,500 | 26,534 | 225,170 |
| 4.1 | 2,745 | 42,490 | 60,000 | | 3,933 | 10,623 | 117,046 |
| 4.2 | 6611 | 103,002 | | | 3,933 | 25,751 | 132,686 |
| 4.3 | 2,745 | 42,490 | | | 3,933 | 10,623 | 57,046 |
| 4.4 | 40 | 1,400 | 20,000 | | | 350 | 21,750 |
| 4.5 | 80 | 2,800 | 60,000 | | | 700 | 63,500 |
| Total Task 4 | 12,221 | 192,182 | 140,000 | 0 | 11,799 | 48,046 | 392,027 |
| 5.1 | 2,682 | 56,275 | | | 3,500 | 5,628 | 65,403 |
| 5.2 | 5,268 | 67,591 | | 2,500 | 3,500 | 6,759 | 80,350 |
| 5.3 | 4,368 | 52,504 | | | 3,500 | 5,250 | 61,254 |
| Total Task 5 | 12,318 | 176,370 | 0 | 2,500 | 10,500 | 17,637 | 207,007 |
| Total, All Tasks | 60,720 | 936,405 | 253,600 | 21,500 | 195,119 | 207,646 | 1,614,270 |

| TABLE III: Quarterly Budget | | | | | | | |
|------------------------------------|----------------|----------------|----------------|----------------|----------------|------------------|---------------------|
| | Task 1 | Task 2 | Task 3 | Task 4 | Task 5 | TOTAL | ANNUAL TOTAL |
| Jan-March 00 | 59,172 | 0 | 5,346 | 32,764 | 19,696 | 116,978 | |
| April-June 00 | 59,172 | 0 | 5,346 | 32,764 | 19,696 | 116,978 | |
| July-Sept 00 | 59,172 | 0 | 5,345 | 32,764 | 19,696 | 116,977 | |
| Oct-Dec 00 | 59,172 | 0 | 5,345 | 42,835 | 19,696 | 127,048 | 477,981 |
| Jan-March 01 | 62,464 | 0 | 19,431 | 39,214 | 21,253 | 142,362 | |
| April-June 01 | 62,464 | 0 | 19,431 | 34,249 | 21,253 | 137,397 | |
| July-Sept 01 | 62,464 | 30,288 | 19,431 | 30,892 | 21,253 | 164,328 | |
| Oct-Dec 01 | 62,464 | 30,288 | 19,431 | 30,892 | 21,253 | 164,328 | 608,415 |
| Jan-March 02 | 29,275 | 31,462 | 31,516 | 28,914 | 10,803 | 131,970 | |
| April-June 02 | 29,275 | 31,462 | 31,516 | 28,914 | 10,803 | 131,970 | |
| July-Sept 02 | 29,275 | 31,462 | 31,516 | 28,914 | 10,803 | 131,970 | |
| Oct-Dec 02 | 29,275 | 31,461 | 31,516 | 28,911 | 10,802 | 131,965 | 527,875 |
| Total Budget | 603,644 | 186,423 | 225,170 | 392,027 | 207,007 | 1,614,271 | |

I - 0 1 9 2 7 0

TABLE IV: Cost Sharing & In-Kind Contributions

| | Other Sources | In-Kind |
|-------------------------|----------------|---------------|
| Year 2000 | | 15,000 |
| Year 2001 | 30,000 | 15,750 |
| Year 2002 | 200,000 | 16,500 |
| Three-Year Total | 230,000 | 47,250 |

NONDISCRIMINATION COMPLIANCE STATEMENT

STD. 19 (REV. 3-95) FMC

COMPANY NAME:

COMMUNITY ALLIANCE WITH FAMILY FARMERS

The company named above (hereinafter referred to as "prospective contractor") hereby certifies, unless specifically exempted, compliance with Government Code Section 12990 (a-f) and California Code of Regulations, Title 2, Division 4, Chapter 5 in matters relating to reporting requirements and the development, implementation and maintenance of a Nondiscrimination Program. Prospective contractor agrees not to unlawfully discriminate, harass or allow harassment against any employee or applicant for employment because of sex, race, color, ancestry, religious creed, national origin, disability (including HIV and AIDS), medical condition (cancer), age, marital status, denial of family and medical care leave and denial of pregnancy disability leave.

CERTIFICATION

I, the official named below, hereby swear that I am duly authorized to legally bind the prospective contractor to the above described certification. I am fully aware that this certification, executed on the date and in the county below, is made under penalty of perjury under the laws of the State of California.

OFFICIAL'S NAME

DATE EXECUTED

EXECUTED IN THE COUNTY OF

YOLO, CA

PROSPECTIVE CONTRACTOR'S SIGNATURE

PROSPECTIVE CONTRACTOR'S TITLE

PROSPECTIVE CONTRACTOR'S LEGAL BUSINESS NAME

**STANDARD CLAUSES --
SMALL BUSINESS PREFERENCE AND CONTRACTOR IDENTIFICATION NUMBER**

NOTICE TO ALL BIDDERS:

Section 14935, et. seq. of the California Government Code requires that a five percent preference be given to bidders who qualify as a small business. The rules and regulations of this law, including the definition of a small business for the delivery of service, are contained in Title 2, California Code of Regulations, Section 1396, et. seq. A copy of the regulations is available upon request. Questions regarding the preference approval process should be directed to the Office of Small and Minority Business at (916) 322-5060. To claim the small business preference, you must submit a copy of your certification approval letter with your bid.

Are you claiming preference as a small business?

_____ Yes*

No

*Attach a copy of your certification approval letter.

APPLICATION FOR
FEDERAL ASSISTANCE

OMB Approval No. 0348-0043

| | | | |
|--|------------------------|---|---------------------------------------|
| 1. TYPE OF SUBMISSION: Application <input type="checkbox"/> Construction <input checked="" type="checkbox"/> Non-Construction Preapplication <input type="checkbox"/> Construction <input checked="" type="checkbox"/> Non-Construction | | 2. DATE SUBMITTED 4/16/99 | Applicant Identifier |
| | | 3. DATE RECEIVED BY STATE | State Application Identifier |
| | | 4. DATE RECEIVED BY FEDERAL AGENCY | Federal Identifier |
| 5. APPLICANT INFORMATION | | | |
| Legal Name: COMMUNITY ALLIANCE with FAMILY FARMERS | | Organizational Unit: | |
| Address (give city, county, state, and zip code): P.O. Box 363 DAVIS, CA 95617 Yolo | | Name and telephone number of person to be contacted on matters involving this application (give area code): Judith REDMOND, Executive Director (530) 756-8518 ext. 13 | |
| 6. EMPLOYER IDENTIFICATION NUMBER (EIN): 94-2914743 | | 7. TYPE OF APPLICANT: (enter appropriate letter in box) A. State B. County C. Municipal D. Township E. Interstate F. Intermunicipal G. Special District H. Independent School Dist. I. State Controlled Institution of Higher Learning J. Private University K. Indian Tribe L. Individual M. Profit Organization N. Other (Specify): Non-profit Org. <input checked="" type="checkbox"/> N | |
| 8. TYPE OF APPLICATION: <input checked="" type="checkbox"/> New <input type="checkbox"/> Continuation <input type="checkbox"/> Revision If Revision, enter appropriate letter(s) in box(es) A. Increase Award B. Decrease Award C. Increase Duration D. Decrease Duration Other (specify): | | 9. NAME OF FEDERAL AGENCY: CAL FED | |
| 10. CATALOG OF FEDERAL DOMESTIC ASSISTANCE NUMBER: TITLE: | | 11. DESCRIPTIVE TITLE OF APPLICANT'S PROJECT: Protecting Water Quality in the Sacramento and San Joaquin Watershed through Biological Farming Outreach and Education | |
| 12. AREAS AFFECTED BY PROJECT (Cities, Counties, States, etc.): Fresno, Madera, Merced, San Joaquin, Solano, Stanislaus, Yolo | | | |
| 13. PROPOSED PROJECT | | 14. CONGRESSIONAL DISTRICTS OF: | |
| Start Date 1/2005 | Ending Date 12/2002 | a. Applicant 03 | b. Project 1, 3, 11, 18, 19, 20 |
| 15. ESTIMATED FUNDING: | | 16. IS APPLICATION SUBJECT TO REVIEW BY STATE EXECUTIVE ORDER 12372 PROCESS? | |
| a. Federal | \$ 00 | a. YES: THIS PREAPPLICATION/APPLICATION WAS MADE AVAILABLE TO THE STATE EXECUTIVE ORDER 12372 PROCESS FOR REVIEW ON: DATE: | |
| b. Applicant | \$ 00 | b. No: <input checked="" type="checkbox"/> PROGRAM IS NOT COVERED BY E.O. 12372 <input type="checkbox"/> OR PROGRAM HAS NOT BEEN SELECTED BY STATE FOR REVIEW | |
| c. State | \$ 00 | | |
| d. Local | \$ 00 | | |
| e. Other | \$ 00 | | |
| f. Program Income | \$ 00 | | |
| g. TOTAL | \$ 1,614,270 | 17. IS THE APPLICANT DELINQUENT ON ANY FEDERAL DEBT? <input type="checkbox"/> Yes If "Yes," attach an explanation. <input checked="" type="checkbox"/> No | |
| 18. TO THE BEST OF MY KNOWLEDGE AND BELIEF, ALL DATA IN THIS APPLICATION/PREAPPLICATION ARE TRUE AND CORRECT, THE DOCUMENT HAS BEEN DULY AUTHORIZED BY THE GOVERNING BODY OF THE APPLICANT AND THE APPLICANT WILL COMPLY WITH THE ATTACHED ASSURANCES IF THE ASSISTANCE IS AWARDED. | | | |
| a. Type Name of Authorized Representative Judith REDMOND | | b. Title Executive Director | c. Telephone Number (530) 756 8518 |
| d. Signature of Authorized Representative <i>Judith Redmond</i> | | a. Date Signed 4/15/99 | |

Previous Edition Usable
Authorized for Local Reproduction

Standard Form 424 (Rev. 7-97)
Prescribed by OMB Circular A-102

ASSURANCES - NON-CONSTRUCTION PROGRAMS

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0040), Washington, DC 20503.

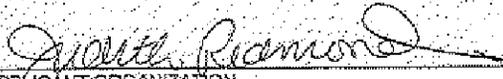
PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET. SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.

NOTE: Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the awarding agency. Further, certain Federal awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant, I certify that the applicant:

1. Has the legal authority to apply for Federal assistance and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project cost) to ensure proper planning, management, and completion of the project described in this application.
2. Will give the awarding agency, the Comptroller General of the United States and, if appropriate, the State, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to the award, and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.
3. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.
4. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.
5. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§4728-4763) relating to prescribed standards for merit systems for programs funded under one of the 50 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).
6. Will comply with all Federal statutes relating to nondiscrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681-1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290-293 and 290-293), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VII of the Civil Rights Act of 1964 (42 U.S.C. §§2001 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.
7. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-546) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.
8. Will comply, as applicable, with provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

9. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§276a to 279a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327-333), regarding labor standards for federally-assisted construction subagreements.
10. Will comply, if applicable, with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is \$10,000 or more.
11. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451 et seq.); (f) conformity of Federal actions to State (Clean Air) Implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-523); and, (h) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93-205).
12. Will comply with the Wild and Scenic Rivers Act of 1966 (16 U.S.C. §§1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.
13. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. §470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §§469a-1 et seq.).
14. Will comply with P.L. 93-348 regarding the protection of human subjects involved in research, development, and related activities supported by this award of assistance.
15. Will comply with the Laboratory Animal Welfare Act of 1966 (P.L. 89-544, as amended, 7 U.S.C. §§2131 et seq.) pertaining to the care, handling, and treatment of warm blooded animals held for research, teaching, or other activities supported by this award of assistance.
16. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4501 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.
17. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."
18. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.

| | |
|--|----------------------------------|
| SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL  | TITLE Executive Director |
| APPLICANT ORGANIZATION Community Alliance with Family Farmers (CAFF) | DATE SUBMITTED April 16, 1999 |

Standard Form 424B (Rev. 7-97) Back



CAFF

COMMUNITY ALLIANCE
WITH FAMILY FARMERS

P.O. Box 963

Delta, CA

95817-0363

Phone:

530.756.8316

Fax:

530.756.7857

E-mail:

caff@caff.org

Web site:

www.caff.org



Board of Directors

*Mark Weil
President*

*Britt Yemond's
Vice President*

*Michelle
Mascarenhas
Secretary*

*Linda Cole
Treasurer*

Lisa Brenden

Terry Harrison

Joe Mitchell

Robert Krutts

Sunny Shit

David Visher

April 16, 1999

CALFED Bay-Delta Program
1416 Ninth Street, Suite 1155
Sacramento CA 95814

To CALFED Bay-Delta Program,

I am writing to disclose that I am currently serving as the Interim Executive Director of CAFF, and as a member of the Bay Delta Advisory Council (BDAC). Under conflict of interest rules (California Government Code Section 1090 and 1091), my interest appears to be "remote."

When I am present at BDAC meetings during which Ecosystem Restoration funding is under discussion, I have not only disclosed my potential interest, but have also left the room so as not to be present during the discussion.

I am serving temporarily as Interim Executive Director. CAFF is conducting a nationwide search for a new Director and we expect that the search will be completed before the end of 1999. Obviously, I do not expect to receive any windfall payments if this grant were funded, and in fact may no longer be on staff at the time that the work begins.

Sincerely,


Judith Redmond
Interim Executive Director



CAFF

COMMUNITY ALLIANCE
WITH FAMILY FARMERS

P.O. Box 853

Davis, CA

95617-0853

Phone:

530.756.8518

Fax:

530.756.7857

E-mail:

caff@caff.org

Web site:

www.caff.org



Board of Directors

Mark Phell
President

Erill Yamamoto
Vice President

Michelle
Mascarenhas
Secretary

Linda Cole
Treasurer

Lise Brenneis

Terry Harrison

Joe Mitchell

Robert Runkles

Sunny Stone

David Visher

April 7, 1999

Fresno County Board of Supervisors
2261 Tulare Street, Room 301
Fresno, CA 93721

Dear Chairperson and Persons of the Board,

I am writing on behalf of the Board of Directors of the Community Alliance with Family Farmers (CAFF) to inform you that CAFF is applying for funding from the CALFED Ecosystem Restoration Program for a project in your county.

The project we are proposing will provide public outreach and technical assistance to farmers seeking to reduce their use of water-contaminating pesticides and fertilizers. CAFF's Biologically Integrated Orchard Systems (BIOS) and Lighthouse Farm Network programs are already active in your county and have demonstrated effectiveness at helping farmers reduce their reliance on toxic farm chemicals without sacrificing their yields.

We are excited about expanding our efforts through the project. If you have any questions regarding the specifics of the proposal, please contact our Program Director, Jill Klein, at (530) 756-8518, extension 11.

Sincerely,


Judith Redmond
Executive Director



CAFF

COMMUNITY ALLIANCE
WITH FAMILY FARMERS

P.O. Box 363

Davis, CA

95617-0363

Phone:

530.756.8528

Fax:

530.756.7257

E-mail:

caff@caff.org

Web site:

www.caff.org



Board of Directors

*Mark Hill
President*

*Bruce Yamamoto
Vice President*

*Mitchell
Blaschert
Secretary*

*Linda Cole
Treasurer*

Lisa Brennets

Terry Harrison

Joe Mitchell

Robert Ruskis

Sunny Skine

David Wisher

April 7, 1999

Madera County Board of Supervisors
209 W. Yosemite Avenue
Madera, CA 93637

Dear Chairperson and Persons of the Board,

I am writing on behalf of the Board of Directors of the Community Alliance with Family Farmers (CAFF) to inform you that CAFF is applying for funding from the CALFED Ecosystem Restoration Program for a project in your county.

The project we are proposing will provide public outreach and technical assistance to farmers seeking to reduce their use of water contaminating pesticides and fertilizers. CAFF's Biologically Integrated Orchard Systems (BIOS) and Lighthouse Farm Network programs are already active in your county and have demonstrated effectiveness at helping farmers reduce their reliance on toxic farm chemicals without sacrificing their yields.

We are excited about expanding our efforts through the project. If you have any questions regarding the specifics of the proposal, please contact our Program Director, Jill Klein, at (530) 756-8518, extension 11.

Sincerely,

Judith Redmond
Judith Redmond
Executive Director



CAFF

COMMUNITY ALLIANCE
WITH FAMILY FARMERS

P.O. Box 363

Davis, CA

95617-0363

Phone:

530.756.8518

Fax:

530.756.7857

E-mail:

caff@caff.org

Web site:

www.caff.org



Board of Directors

Mark Wall
President

Brett Yamamoto
Vice President

Michelle
Mascarenhas
Secretary

Linda Cole
Treasurer

Lisa Bronketa

Terry Harrison

Joe Mitchell

Robert Raatikis

Eunzy Shira

David Visser

April 7, 1999

Merced County Board of Supervisors
2222 M Street
Merced, CA 95340

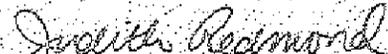
Dear Chairperson and Persons of the Board,

I am writing on behalf of the Board of Directors of the Community Alliance with Family Farmers (CAFF) to inform you that CAFF is applying for funding from the CALFED Ecosystem Restoration Program for a project in your county.

The project we are proposing will provide public outreach and technical assistance to farmers seeking to reduce their use of water-contaminating pesticides and fertilizers. CAFF's Biologically Integrated Orchard Systems (BIOS) and Lighthouse Farm Network programs are already active in your county and have demonstrated effectiveness at helping farmers reduce their reliance on toxic farm chemicals without sacrificing their yields.

We are excited about expanding our efforts through the project. If you have any questions regarding the specifics of the proposal, please contact our Program Director, Jill Klein, at (530) 756-8518, extension 11.

Sincerely,


Judith Redmond
Executive Director



CAFF

COMMUNITY ALLIANCE
WITH FAMILY FARMERS

P.O. Box 363

Davis, CA

95617-0363

Phone:

530.756.9518

Fax:

530.756.7857

E-mail:

caff@caff.org

Web site:

www.caff.org



Board of Directors

Mark Weil
President

Britt Yamamoto
Vice President

Michelle
Masparavelas
Secretary

Linda Cole
Treasurer

Lisa Brennan

Terry Harrison

Joe Mitchell

Robert Rarikis

Sunny Shine

David Visher

April 7, 1999

San Joaquin County Board of Supervisors
222 N. San Joaquin, Room 700
Stockton, CA 95202

Dear Chairperson and Persons of the Board,

I am writing on behalf of the Board of Directors of the Community Alliance with Family Farmers (CAFF) to inform you that CAFF is applying for funding from the CALFED Ecosystem Restoration Program for a project in your county.

The project we are proposing will provide public outreach and technical assistance to farmers seeking to reduce their use of water contaminating pesticides and fertilizers. CAFF's Biologically Integrated Orchard Systems (BIOS) and Lighthouse Farm Network programs are already active in your county and have demonstrated effectiveness at helping farmers reduce their reliance on toxic farm chemicals without sacrificing their yields.

We are excited about expanding our efforts through the project. If you have any questions regarding the specifics of the proposal, please contact our Program Director, Jill Klein, at (530) 756-8518, extension 11.

Sincerely,


Judith Redmond
Executive Director



CAFF

COMMUNITY ALLIANCE
WITH FAMILY FARMERS

P.O. Box 363

Davis, CA

95617-0363

Phone:

930.756.8518

Fax:

930.756.7897

E-mail:

caff@caff.org

Web site:

www.caff.org



Board of Directors

Mark Wolf
President

David Youmans
Vice President

Michelle
MacCrimmon
Secretary

Linda Cole
Treasurer

Lisa Bremets

Terry Harrison

Joe Mitchell

Robert Knutts

Sunny Skina

David Visser

April 7, 1999

Solano County Board of Supervisors
580 Texas Street
Fairfield, CA 94533

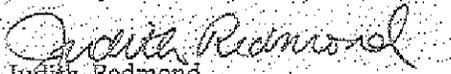
Dear Chairperson and Persons of the Board,

I am writing on behalf of the Board of Directors of the Community Alliance with Family Farmers (CAFF) to inform you that CAFF is applying for funding from the CALFED Ecosystem Restoration Program for a project in your county.

The project we are proposing will provide public outreach and technical assistance to farmers seeking to reduce their use of water contaminating pesticides and fertilizers. CAFF's Biologically Integrated Orchard Systems (BIOS) and Lighthouse Farm Network programs are already active in your county and have demonstrated effectiveness at helping farmers reduce their reliance on toxic farm chemicals without sacrificing their yields.

We are excited about expanding our efforts through the project. If you have any questions regarding the specifics of the proposal, please contact our Program Director, Jill Klein, at (930) 756-8518, extension 11.

Sincerely,


Judith Redmond
Executive Director



CAFF

COMMUNITY ALLIANCE
WITH FAMILY FARMERS

P.O. Box 363

Davis, CA

95817-0363

Phone:

530.756.8518

Fax:

530.756.7857

E-mail:

caff@caff.org

Web site:

www.caff.org



Board of Directors

*Mark Wall
President*

*Brian Yonick
Vice President*

*Michelle
Mason
Secretary*

*Linda Lole
Treasurer*

Lisa Brenneke

Terry Harrison

Joe Mitchell

Robert Rankin

Sunny Shine

David Visser

April 7, 1999

Stanislaus County Board of Supervisors
1100 H Street, Second Floor
Modesto, CA 95354

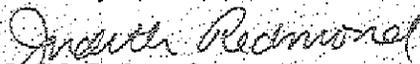
Dear Chairperson and Persons of the Board,

I am writing on behalf of the Board of Directors of the Community Alliance with Family Farmers (CAFF) to inform you that CAFF is applying for funding from the CALFED Ecosystem Restoration Program for a project in your county.

The project we are proposing will provide public outreach and technical assistance to farmers seeking to reduce their use of water contaminating pesticides and fertilizers. CAFF's Biologically Integrated Orchard Systems (BIOS) and Lighthouse Farm Network programs are already active in your county and have demonstrated effectiveness at helping farmers reduce their reliance on toxic farm chemicals without sacrificing their yields.

We are excited about expanding our efforts through the project. If you have any questions regarding the specifics of the proposal, please contact our Program Director, Jill Klein, at (530) 756-8518, extension 11.

Sincerely,


Judith Redmond
Executive Director



CAFF

COMMUNITY ALLIANCE
WITH FAMILY FARMERS

P.O. Box 353

Davis, CA

95617-0353

Phone:

530.756.8518

Fax:

530.756.7857

E-mail:

caff@caff.org

Web site:

www.caff.org



Board of Directors

Mark Weil
President

Bill Yamamoto
Vice President

Michelle
Mascarenhas
Secretary

Linda Cole
Treasurer

Lisa Brennets

Terry Harrison

Joe Mitchell

Robert Knutke

Sunny Shine

David Visher

April 7, 1999

Yolo County Board of Supervisors
625 Court Street, Room 204
Woodland, CA 95695

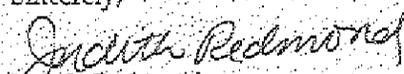
Dear Chairperson and Persons of the Board,

I am writing on behalf of the Board of Directors of the Community Alliance with Family Farmers (CAFF) to inform you that CAFF is applying for funding from the CALFED Ecosystem Restoration Program for a project in your county.

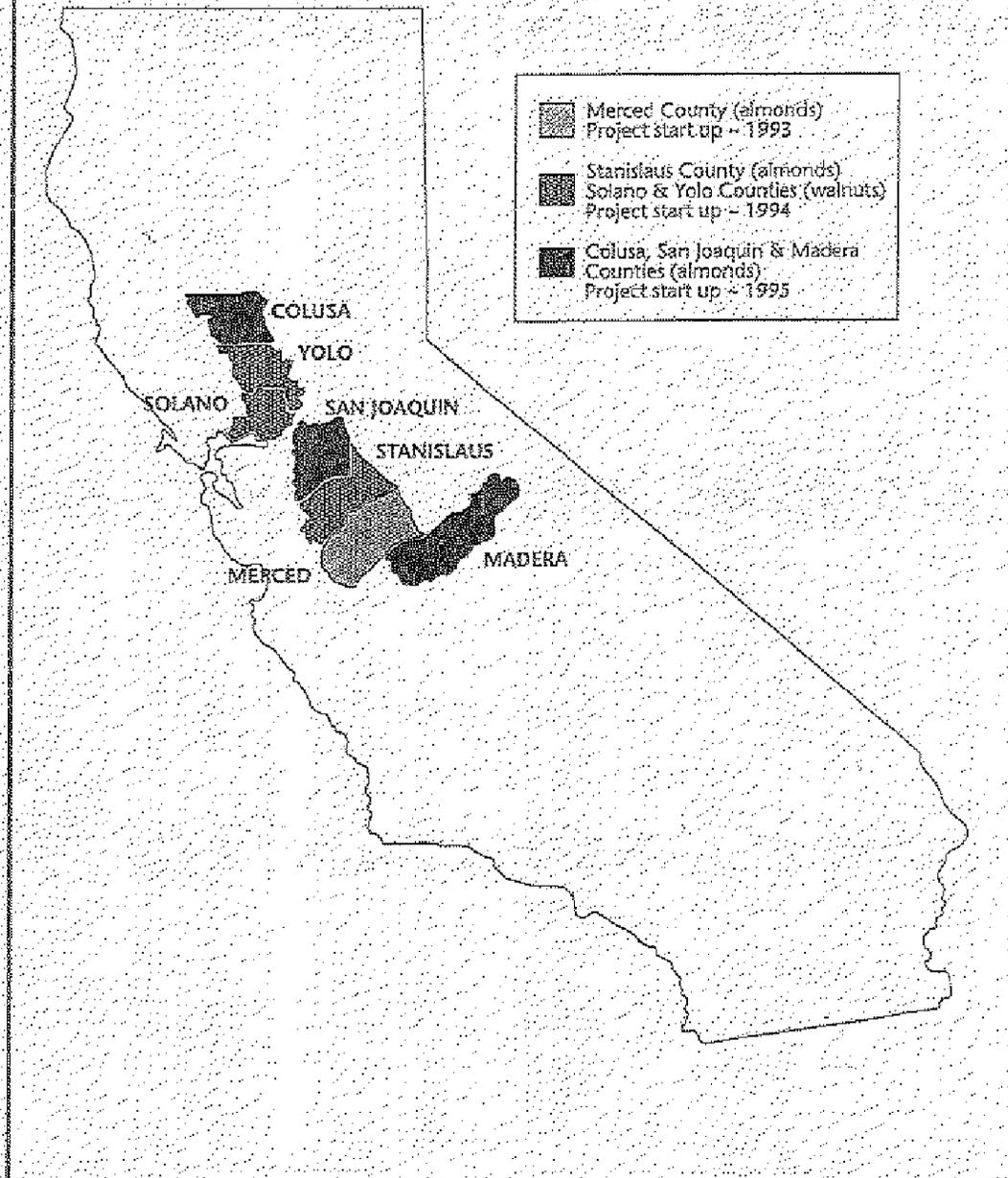
The project we are proposing will provide public outreach and technical assistance to farmers seeking to reduce their use of water contaminating pesticides and fertilizers. CAFF's Biologically Integrated Orchard Systems (BIOS) and Lighthouse Farm Network programs are already active in your county and have demonstrated effectiveness at helping farmers reduce their reliance on toxic farm chemicals without sacrificing their yields.

We are excited about expanding our efforts through the project. If you have any questions regarding the specifics of the proposal, please contact our Program Director, Jill Klein, at (530) 756-8518, extension 11.

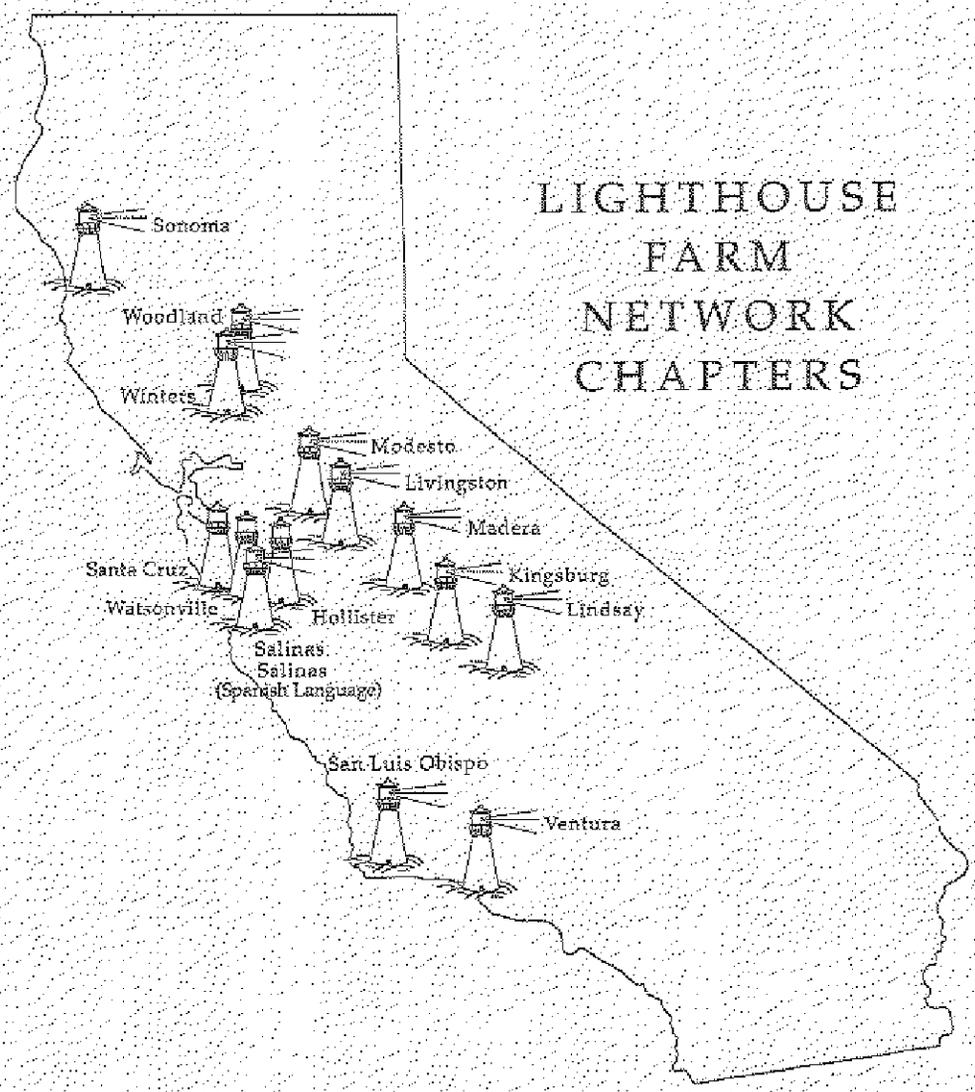
Sincerely,


Judith Redmond
Executive Director

BIOLOGICALLY INTEGRATED ORCHARD SYSTEMS IN CALIFORNIA



LIGHTHOUSE FARM NETWORK CHAPTERS



Shaping IPM

Two organizations have built a bridge between fringe farmers with a social agenda and conventional farmers that is a model for IPM

BY LEN RICHARDSON

Two organizations, one orchard the other vineyard, are leading the charge in transition to Integrated Pest Management (IPM) while redefining traditional roles and relationships with California agriculture. The organizations are the Biologically Integrated Orchard System (BIOS) in the Merced area and the Biologically Integrated Farming Systems (BIFS) in the Lodi-Woodbridge vineyard district.

Ironically, both organizations owe their birth to perhaps a lesser known but more activist organization known as the Community Alliance with Family Farmers or CAFF. CAFF was originally the California Action Network that helped instigate a successful lawsuit against the University of California demonstrating that UC agriculture research hurt small farmers. This ideological baggage made finding common ground all the more difficult, while making BIOS and BIFS successes more impressive.

This background and an assessment of the BIOS and BIFS projects are part of a report prepared by Robert A. Pence, UC-Davis Department of Human and Community Development. Copies of the 200 page report are available for \$15 from the Department at One Shields Ave., Davis, 95616.

BIOS is a demonstration program designed to help almond and walnut growers reduce the use of pesticides and fertilizers through the adoption of a more integrated approach to farming. The program is coordinated by CAFF based in Davis. Since 1993, when the first project started in Merced, 89 farmers have officially enrolled a total of more than 5,000 acres in six projects.

BIFS is a state administered offspring of BIOS. In mandating BIFS, the 1993 California State Assembly Bill 3383 calls for the development and support of pilot demonstration projects. The projects are patterned "to the degree feasible after the successful BIOS programs..." So far, two projects have been funded. The first project builds upon an already established area wide IPM program coordinated by the Lodi-Woodbridge Winegrape Commission. During the first two years, the Commission established programs for 35

34 California Farmer February 1995



Almond growers attending a BIOS field day in Stanislaus County learn about IPM programs that can be used in their orchards.

vineyards. A second BIFS project is coordinated by a UC Cooperative Extension field specialist and focuses on tomato, cotton and grain crop rotations in the West Side of the Central Valley. Initially, 13 farmers are cooperating in the West Side project.

It is clear from the report that measuring the impacts of the two programs is difficult. Do farmers who orchestrate biological balance in their farms have healthier soils, etc.? Do cover crops really keep beneficial insects in an orchard or vineyard? Or, do growers look for a measure of program impacts that mixes together the biological system in hopes of finding clear evidence of pesticide reduction. All of these aspects are difficult to measure. Some can be downright misleading.

A University program director, for example, warned that evidence of pesticide reduction is the "Holy Grail" for these Agriculture Partnership projects. "People are in love with you right now. You are trying to be proactive and change attitudes. That's why I like to be involved down there. But the bottom line is that they will ask for evidence in change of

pesticide use," he says.

"We want to see reduction, maintained yields and sustainable economics," responds Katherine Taylor, EPA Senior Associate. "Congress is pushing us, not just us but the other programs as well, for valid quantitative measurement. This is a recurring issue for EPA, how to measure impacts of a program. We are driving for quantitative measures of success," she says.

Yet most observers agree, evidence of short-term pesticide reduction linked to a specific educational intervention is nearly impossible to isolate and is often misleading. During a BIFS-Lodi Pest Control Advisor (PCA) meeting, one participant pointed out that pesticide use records from BIFS growers will give a misleading picture because reduction data will be based on growers who were progressive by nature and who had already reduced their pesticide use before joining the program. Other PCAs agreed but noted that the BIFS program required evidence of reduction.

"That's my greatest fear about BIFS," says Randy Lange, a Lodi

continued on page 35

grower. "The bean counters only want to measure success by chemical reduction. The Lange Twins (farm heirs) bought 10,000 pounds of this and now they only buy 5,000 pounds because of the BIOS program. Well, that doesn't tell you what's going on. The program may be a huge success and I still may have to increase the uses of a given chemical. I tell you reductions may or may not happen, but that doesn't necessarily mean BIOS is or isn't a success."

Opslett Pershke sees this as one aspect of program evaluation. It is misleading to weigh that data too heavily as criteria of program worth, the report says.

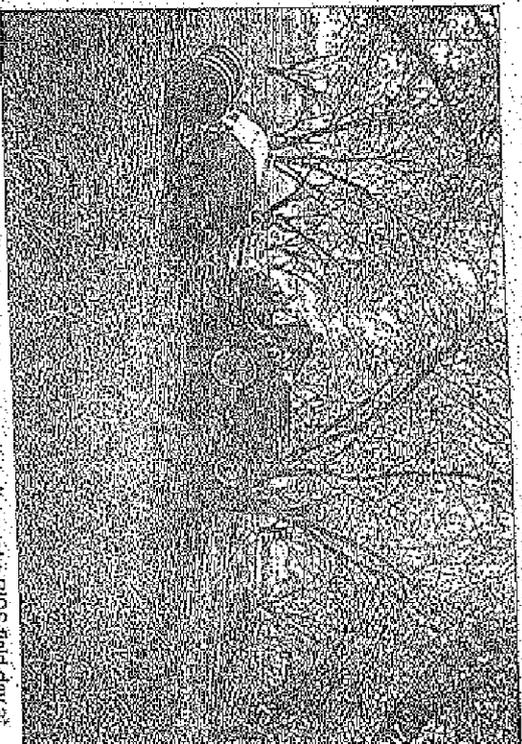
In other words BIOS and BFRS represent a systems approach to farm management. Wide measures of program impact, including short term pesticide reduction, are based on analytical models that assume linear cause and effect.

Spray Dike and all mines will be eliminated. In contrast, integrated systems models see change as the result of complex interactions in which single causes are difficult to isolate. The right inputs won't necessarily lead to predictable change, but creating the right environment may allow desired change to emerge.

Andy Hilde we are working with complex systems, innovation can happen as an emergent property of a particular combination of things that we bring to bear, says Bob Hogg, of the UC-Davis Sustainable Agriculture, Research and Education Program (SAREP).

In short, there are no cookbook answers but there are concepts, principles and approaches. Similarly, in terms of program outreach, a farm advisor can create the space for farmer learning and change, but when and how that change will express itself is not predictable, the report says.

"You can't even measure what may be the most important impacts of these programs. That's seen one of the biggest problems when you are talking about IPM or bio-intensive," agrees Paul Casselin, Assistant Director of the California Department of Pesticide Regulation (DPR). "You are talking about a philosophy of a way of thinking and you can't measure that in any way that is quantifiable. Yet we are all reaching for quantifiable evidence." Indeed, some observers consider



A brush shredder demonstration is among the agenda items at a BIOS field day at the Sherman Boone orchard in Denair.

the influence of BIOS on DPR to be one of the most important impacts of the program. By creating political space for state legislative approval of BIOS, and EPA and DPR funded program administered by SAREP and CAFF institutionalized the planning model in the California Department of Agriculture, DPR and the University of California.

"Now DPR is funding its own BIOS-like projects," observes EPA's Katherine Taylor. "This is really a result of the political pressure that CAFF brought to bear. DPR is dependent on the Mill tax that comes from pesticide sales so in the past the pesticide industry has had a lot of control over how that money was spent. The action of CAFF helped bring more balance to this equation," she says.

Casselin concurs. "We [DPR] weren't really talking about community-based extension before BIOS but once it got our attention we started to look around at BIOS. Todd Woodbridge the Filmore district grower and a couple of others they seemed to follow a consistent pattern in how they were taking the research and transferring it into a local group and how they were interacting on a local level. So all these groups painted a good mosaic of what worked."

Ultimately these are skeptics. A University program director has no reason any major impact from the program that reached beyond the small group of BIOS trained growers. "... Will BIOS have an effect beyond a small segment of farmers? So far I haven't had a major impact," he says. "Most of the growers I work with never ask me about BIOS."

a great an independent PCA involved with the program. "I let them know I'm working with BIOS but they don't say anything. They never ask me how the BIOS stuff is going. From that perspective it's not having a huge impact."

Yet other PCAs say they learn from the program as one commentor. "I don't talk about BIOS specifically to the farmers I work with, but some of the ideas I get from BIOS I pass on in my recommendations. Like I picked up something from the last field day about San Jose scale. Now I have my farmers trying it. I got that from BIOS."

Sherman Boone, a BIOS farmer in Stanislaus County, points out that his cover crop he planted in his orchard is stirring interest among his neighbors. "People stop and ask where I got my seed mix. They feel like they can talk to me. It's interesting, three chemical company salesmen use my yard, they talk about my experience with cover crops. They are seeing it every day when they drive in to drop off their kids. Since we put in the cover crop strips in the orchard, we've had it people stop and talk with us about it."

Frank Assali is an almond farmer and Sherman Boone's processor. While he is not enrolled in BIOS and hasn't been talking about some aspects of the program he is interested in what Boone is doing and has begun his own experiments with cover crops. "Farmers are real cautious. They are wary about to know what their neighbors are doing. I see people stop all the time to take a look at the cover crops in my orchard."

One grower with average-sized

continued on page 35

California Farmer February 1993 35

to BIOS points out that even among BIOS growers program impact may be underestimated. "We're actually doing 200 acres under BIOS, but we just don't sign it all up. It's on the same irrigator as our BIOS block. We treat it the same way. We just haven't officially signed up."

"I think growers have changed a lot of their practices in the last few years and it certainly isn't all due to BIOS but BIOS played an important

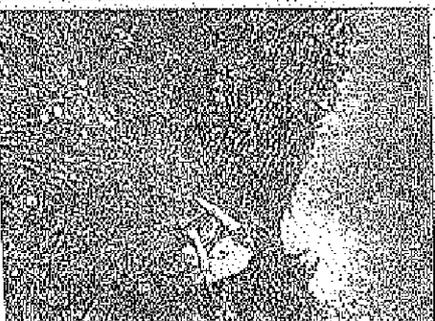
role," says Lonnie Hendricks, a UC Cooperative Extension farm advisor in Merced County. The 81 thing has made a big difference. That's a real big factor, I think growers, whether they're here or not, have changed their thinking a lot. They've seen that this approach actually works. I think this may have gotten them questioning if they really needed to use any materials that were so toxic. I think that the publicity that CAIF people are able to pull to get this whole process."

But it's not only the grower community that has changed, the direction

of research is changing as well. "Composting is a good example of a program impact on research," observes Mark Shmoraad, chairman of the Lodi Woodbridge Winegrape Commission. "Some growers are spending thousands of dollars to add compost to their soils. It feels right. We're adding organic matter. It's gotta be good but we really don't know that we are encouraging research through SAREP. It's just what's going on."

The Commission grew out of the Lodi District Grape Growers Board, a locally organized group that raised volunteer money to fund locally relevant research. The Commission is now in Mendocino University research.

"The Commission has funded the search on cover crops that grew out of the IPM program," observes Randy Lange. "They funded cover crop research with the idea that it would provide an incentive for beneficial insects. I don't think it really does that. We also funded research on beneficial insect releases. It works, but costs are way up. The benefits were still working on a



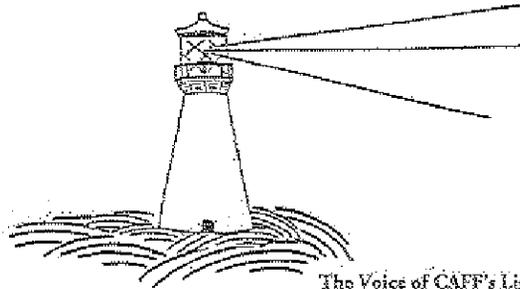
Mark Chandler, director of the Lodi-Woodbridge Winegrape Commission, shows outa cover crop being used by a grower near Lodi.

and those are new issues we're now working on a few years ago. So yes, the IPM program has affected research.

"Lodi has organized IPM fornic commodities," says Mark Chandler, Commission director. "We've done numbers of issues for other commodity groups focused on the IPM program for other grape grower groups and for regulators and grant makers."

GLIS is "absolutely important," Lange says. "I think it is doing the things it's doing something in the field, but it's also doing a lot of people's minds. We couldn't have accomplished what we have without it."

38 California Farmer February 1999



The Foghorn

The Voice of CAFF's Lighthouse Farm Network

April 1999, Issue 70

CAFF's central office in Davis will be moving next month to Glide Ranch, a turn-of-the-century restored farmhouse a few miles outside of town. You are invited to join us in celebrating our move on May 1, from 3-6 P.M. There will be plenty of room for community events. When you are in the area, please be sure to stop by and say hello.

San Joaquin Valley

New Marketing Strategies for California Clean

—Kingsburg, March 11

Fruit tree orchards are in full bloom right now. Because of El Niño, trees put out a half-sized crop last year. However, that gave the trees a rest and time to store energy in their roots. This year, growers predict an abundance of high quality fruit, and hope for a high demand and stable prices.

California Clean growers are continuing to diversify and find new markets. "There's no use competing with growers who have

10,000 acres of carrots, with specialized equipment for every step of the process," says grower Paul Buxman. "We have to offer a 'different carrot.'" Local growers found that people are willing to drive as much as 25 miles to a farm for fresh, high quality, low-priced vegetables, melons, eggs, dairy products and meat.

Kingsburg growers are in the process of opening a fruit stand. The cost for an in-town stand was too high, so they are building an on-farm stand. Seven growers will provide 50 items, including value-added products, like dried peaches and



We have to offer a "different carrot."

jams.

The next frontier for California Clean is pasture-raised hogs. Growers already have the pastures and are now looking for appropriate fencing. Although profit is a few years away, they are encouraged by requests from folks who are interested in animals raised in this manner.

Alternatives to Dormant Spray

—Modesto, February 16

Greg Plunkett from Abbott Labs talked about his company's brand of *Bacillus thuringiensis* (Bt), called Dipel. Bts are used at

bloom time, as an alternative to dormant spray to control peach twig borer (PTB) in almonds, peaches, and apricots.

PTBs overwinter as first or second instar larvae, mostly in the crotches of one- to two-year-old trees. At bloom time, PTBs crawl out of their tunnels (hibernaculum). The 1/8" inch chimney of fuss at the entrance to the hibernacula will tell you that you have PTB larvae.

In the spring, the pests crawl up the branches, chew on buds and leaves, and eventually tunnel in to the growing shoots of the tree. There they finish their development into pupae and moth.

Abbott Labs offers a service where "Dr. Hibernacula" representatives go into your fields to estimate how many PTBs have emerged and how many are still inside. The timing of Bt application is important for maximum effectiveness.

If it's too early, they haven't come out yet, and won't feed on the Bt. If it's too late, they may have already burrowed into a

Editing, design & production: Reggie Knox, Glenn Okrongly

This month's contributors: Keith Aheles, Paul Busman, Cathy Darling, Trudy Fox, Gary Glidden, Reggie Knox, Tom Lockhart, Lee Moren, Miltan Volac, Beth von Gunten.

Many thanks to our funders: Wallace Genetic Foundation, Polygenia, Farm Aid, CALFPA, Foundation for Deep Ecology, UCSC Center for Agroecology, California Integrated Waste Management Board, USDA-RGIP, Cal Fed Rural Delta Accord.

The Foghorn is the monthly newsletter of the Lighthouse Farm Network (LFN), a program of the Community Alliance with Family Farmers (CAFF). Through a statewide network of monthly meetings and field days, the LFN provides technical information and support to all those interested in biologically based farming practices.

Send correspondence to CAFF, P.O. Box 263, Davis, CA 95617.

Phone (530) 756-8518; Fax (530) 756-7857; e-mail: lfn@caff.org; www.caff.org

shoot, feeding from the inside rather than the outside.

The ideal time for the first *Bt* spray is when 20% of PTBs have emerged from the hibernacula. Follow up with a second spray when 50-80% of them have emerged.

PTB larvae eat *Bt*, get sick, immediately stop feeding, and shortly afterwards die. It has been found that *Bt* kills PTB as effectively as standard dormant spray, such as Diazinon.

Managing Cover Crops & Bees in Almonds

—Livingston, February 25

Cindy Lashbrook discussed strategies for managing cover crops, including seed selection, when to mow, frost protection, and bees. Leslie Miller, who has a cover crop planting business, was on hand to discuss different species, needs, and care of cover crops. For more information, contact Cindy at (209) 761-0081 or Leslie at (209) 522-4324.

A local beekeeper was present at the meeting. He encouraged people to plant mustard and others species that flower before almonds bloom. Bees need strength at this time. Don't worry about competition when almonds start to bloom. Bees will prefer the high protein content of almond nectar and pollen. He also advised keeping hives together—one strong active group of bees works better than smaller clusters. Plus, bees will fly quite a distance to find pollen.

Southern Sacramento Valley

Economics of Alternative Practices

—Yolano, February 16

Dr. Karen Klonsky and George Kress led a discussion about financial aspects of using cover crops and other alternative practices.

Karen is a Cooperative Extension Specialist in the Department of Agricultural and Resource Economics at UC Davis. "Using cover crops," she said, "requires thinking about farming in a different way." It's important to evaluate your resources, and determine whether or not you need new equipment, or different kinds of labor and materials. The costs of cover crop incorporation, mowing, irrigation, and labor vary greatly from location to location, and must be evaluated on an individual basis.

According to Karen, timing of operations is critical when using alternative practices. For example, when growing a winter cover crop before tomatoes, you may need to use transplants in order to delay planting long enough to get a good cover crop stand. This may

SAMPLE OPERATING COSTS FOR WINTER COVER CROPPING, IN \$/ACRE:

| | low | high |
|-------------|------|-------|
| plant | \$21 | \$60 |
| irrigate | 0 | \$10 |
| mow | 0 | \$4 |
| incorporate | \$4 | \$15 |
| TOTAL | \$25 | \$104 |

How to Work a Covercrop In

1. Cut and weigh the fresh covercrop from 16 square feet (4 by 4 feet).
2. Multiply the fresh weight in pounds by a factor (given below) to estimate the pounds of nitrogen per acre contained in the covercrop.
3. Repeat this sampling 5 to 10 times over the field, depending on its uniformity, and average your results. Samples should be free of dew.

The factors are:

| | |
|----------------|----|
| Lama woollypod | 16 |
| Purple vetch | 16 |
| Bell beans | 10 |
| Berseem clover | 13 |
| Cowpeas | 12 |

—from *Cover Crops for California Agriculture*, UC Division of Agriculture and Natural Resources Publication 21471, 1989

cost up to \$350 more than direct sowing, but can be offset through low weed management costs, good yields and higher prices. The Sustainable Agriculture Farming Systems project at UC Davis found that organic and conventional systems had similar costs, but when cover crops were used with some chemical herbicides, costs were the lowest.

George Kress, a successful organic walnut farmer, disks in his cover crop with two passes. George then goes through his orchard with a springtooth harrow after each irrigation. Some growers are using resident vegetation, and find that by harvest it has all dried down.

George uses the "rule of 16," (see above) to determine how much nitrogen the cover crop will contribute to the subsequent crop, and whether or not the crop will require supplemental nitrogen.

For more information contact Karen at (530) 752-3553 or Miriam Volat at CAFF, (530) 756-8518, ext. 23.

Central Coast

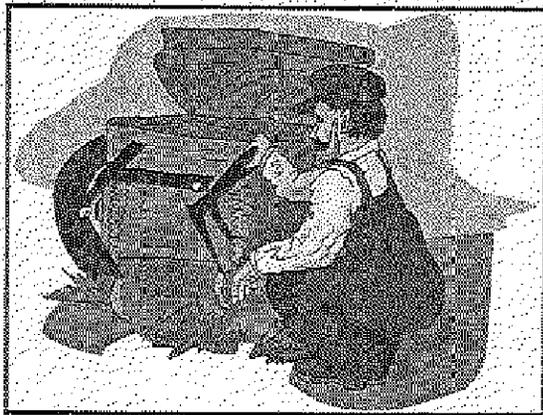
Salinas Valley East Side Watershed Project

—Salinas, February 17

The Resource Conservation District of Monterey County is beginning an erosion control project southeast of Salinas, near Old Stage Road. The goal is to promote erosion control and water management practices on private lands in order to prevent flooding and soil loss, and to improve soil and water quality.

Landowners participating in this project will receive training in management practice selection, sizing, placement and monitoring. Project Coordinator and RCD soil scientist Tom Lochhart, said the project will be modeled on the well-accepted Elkhorn Slough Watershed Project.

The Old Stage Road area is characterized by large, often over-grazed upper watersheds with relatively steep slopes, flowing down to intensively row-cropped ground. Increased residential development and agriculture pressures have contributed to some of the sedimentation and flooding problems. Streams in this area have been straightened to maximize size. Streambanks have eroded



through the practice of clean farming right up to stream edges. Stormwater control has been reduced to routing water out of the fields as quickly as possible. Houses and greenhouses have been placed in areas that should be considered flood plain.

Sediment arrives in streams due to bank slumping, and streambanks have lost their ability to transport it. Streambanks in the row crop land are no longer protected by trees and shrubs and can be easily eroded. High sediment load in the water during fast flows creates a scouring or sandblasting effect. As the water slows, streams become choked with sediment, lose channel definition and function poorly. High concentrations of nitrates in groundwater in the project area are a threat to drinking water.

The RCD would like this to be a landowner-led project that promotes planting vegetation to improve erosion problems wherever possible. Properly selected and positioned vegetation is the most environmentally and economically friendly solution. Cover cropping can protect the soil from erosion, add valuable nutrients, and increase soil organic matter. Barley and triticale plantings on streambanks, accompanied by properly placed shrubs and trees, provide a vegetative solution to slumping. Hedgerow plantings with native perennials can filter water flowing from fields, and roots from these plants will stabilize soil. Perennial grasses like creeping wild rye reduce erosion in ditches and roadways. Quick soil tests are being promoted as a means of fine tuning midseason sidedress applications of nitrogen fertilizer. Slowing runoff through various management measures can also affect nitrate concentrations in groundwater by allowing more water to infiltrate the soil.

When something more than vegetation is required to reduce erosion and stormwater flows, the RCD promotes well

engineered, landowner-constructed features such as sediment traps and basins, well placed rock rip-rap-type streambank stabilization, and correctly sized stream crossings.

Stalling peak flows of runoff until the drainage system can accommodate more water will reduce flooding hazards in the Old Stage Road area. Often a solution can include a berm and spillway system engineered in a way that does not excessively hinder the farming operation.

The aim of the project is to enable landowners who have implemented various erosion control practices to be able to monitor the effectiveness of the management themselves.

Range specialist Danny Marquis stated that the RCD works with the Natural Resources Conservation District to promote the Environmental Quality Incentives Program (EQIP), which provides cost-share incentive to landowners who have completed a five-year conservation plan with the NRCS. The RCD and NRCS would like to see landowners functioning as a group to determine what needs to be done in the watershed and then use cost-share programs to assist them in meeting those needs. Call Tom Lockhart for more information, (831) 424-1036.

Using Compost on Your Farm

—Wasonville, February 24

Local suppliers and specialists in high quality agricultural compost met with growers to discuss what to look for, where to buy, and how to use compost in farming operations.

Karin Grobe, of Organic Recyclers Anonymous, described how compost is made and what quality parameters to look for. She encouraged growers to visit the site where the compost is pro-

*Agriculture in Partnership with San Jose's
Community Alliance with Family Farmers Lighthouse Farms Network
invite you to the*

Z-Best Compost Facility Tour **Wednesday, April 14, 1999, 1-3 P.M.** **Z-Best Composting Facility** **Hwy 25 in Gilroy**

Z-Best processes clean green yard trimmings collected curbside in the City of San Jose. Alex Sharpe, Z-Best, will explain how compost is made. A horizontal Zehir Grinder and a Power Screen will be demonstrated.

DIRECTIONS: To get to the Z-Best Facility, take the Highway 25 exit from Highway 101 (just south of Gilroy). Proceed approximately 1.6 miles. The entrance to the Z-Best Compost Facility will be on your right.

*The event is open to the public and admission is free.
In case of rain, wear boots and raincoats.*

*For more information, contact Karin Grobe at (831) 427-3453
or Sam Earnshaw at (831) 471-9915.*

duced whenever possible. Be on the look out for treated lumber and yard waste that could be undesirable in a fresh quality compost blend. Do the "sniff test." Compost should smell earthy but not too odorous. If it smells like ammonia it might burn your plants. A rotten smell would indicate that the compost has not been properly aerated. The compost should be at least three months old, the carbon to nitrogen ratio should be below 18, there should be no sulfites or nitrites present, and the ammonium should be less than 100 ppm. A good pH is around 7.5. After the compost is delivered to you, test for moisture by monitoring the pile temperature for a few days. A rise of no more than 10-15°F is optimal. A pile that is too wet may become anaerobic. When visiting the facility, look at the size of the compost windrows in progress. Four feet is the optimal height. This provides enough surface area to maximize microbial activity. Current compost regulations require that all compost be kept at 131°F for 15 days and turned at least five times. This ensures the destruction of most pathogens and weed seeds.

Mike Brautovich from Sun Land Garden Products in Watsonville brought samples of two kinds of compost produced by his company. "The materials that go into making the compost," he said, "are the most important part of producing a quality, consistent product."

Sun Land constantly turns and monitors their compost, and provides a complete chemical analysis of their products. They can custom blend soil amendments like gypsum, soil sulfur and agricultural lime with compost to suit individual grower needs. Sun Land services the transplant industry with a blend that is composted longer than the field producer. Mike said most growers add four to five tons compost per acre after every cropping cycle. Sun Land's web site is www.sunlandgarden.com.

Don Cranford, from Cranford Compost in Salinas, encouraged growers to think of their soil as a bank account. Compost puts the biology back into the ground. Most growers prefer to spread compost in the fall prior to planting a cover crop. Compost prefers to have roots growing in it to keep the microbial life happy and available to break down the cover crop in the spring. Materials that go into making Don's compost are different in the spring than in the fall.

Don's operation will blend agricultural lime or gypsum into compost prior to delivery, depending on grower needs. His company produces two kinds of compost. One is a commercial compost geared to conventional operations, which contains fewer ingredients. The compost for organic operations is more diverse and finished. Don favors incorporating compost with a spade. He also customizes spreader equipment. Find Don on the internet at www.cranfordinc.com.

Kenny Rumlill of Aptos Landscape in Aptos brought in many

samples of raw ingredients that go into various compost blends. Kenny caters to the smaller grower who requires smaller batches of custom blended compost. He also works with container growers. He is experimenting with blending colloidal minerals with compost to provide trace minerals.

Mike Sears of C&N Tractor was on hand with a Mill Creek manure spreader and information on other Mill Creek loaders and spreaders. Growers had an opportunity to look at the equipment and discuss the pros and cons of various spreaders on the market.

Call Prudy Foxx at (831) 457-1007 for more information.

North Coast

Organic Apple Day

—Sonoma, March 6

Local UCCE Farm Advisor Paul Vossen and Sean Swezey, who works at UC SAREP and UC Santa Cruz Center for Agroecology and Sustainable Food Systems, presented the essentials of organic apple production: selection, nutrition, irrigation, culture, weed control, diseases, and key pests.

Paul discussed significant diseases, such as apple scab, rusting, fireblight, root rot, papery bark, and others. Scab is the most serious, resulting from lingering free moisture at temperatures of 58°-76° F. Controls include spraying nitrogen on leaves, removing litter from the orchard, avoiding overhead water, and regular applications of sulfur and copper products during wet periods.

Paul moved on to discuss orchard culture. Healthy, well-drained soil is ideal. Nutrition can be accomplished with cover crops, composts, and manures. Weed competition is fierce, and must be controlled for small trees. Thinning should be done within thirty days of petal fall; one fruit per cluster is ideal. Apples need ample amounts of good quality water. For maximum production in our cool, coastal climate, apples need 34 inches of water between April and October. That can mean five to seven thousand gallons per acre on a warm July day.

Sean discussed significant apple pests, such as codling moth, aphid, skinworm, and orange tortrix. Codling moth is a difficult and constant challenge to keep under control. The larvae bore into the apple, destroying its commercial value. The moth begins mating when sunset temperatures reach 62°F and higher. Activity generally begins the last week of March. A generation develops in one thousand degree days. Each degree above fifty for one day constitutes a degree-day.

According to Sean, there are three methods used to control moths: cultural, biological, and pheromones. Culturally, moth habitat surrounding the orchard should be minimized. Biologically, viral toxicants can be sprayed during a four- to five-day period



when larvae are vulnerable. All surfaces must be covered. Beneficials like the *trichogramma* wasp can be released at key times: Pheromones confuse males during mating, and lower reproduction.

Contact the Sonoma County Cooperative Extension at (707) 527-2621 or <http://www.ucdipm@ucdavis.edu> for more information, including a production guide developed for the 1998 UC Short Course on Apple Production.

South Central Coast

Weed Management

—San Luis Obispo, February 23

Cathy Darling of San Luis Obispo County Agriculture Department discussed weed management approaches, including yellow starthistle control and biocontrol of weeds.

Mapping your weed population densities will help determine which management approach to use. Treating all population sizes in the same fashion is often a waste of resources and can increase problems. "Eradication," she said, "is only possible on low populations of weeds, and containment management is essential on medium-sized stands." Take a practical approach to management of heavy populations:

Cathy said that areas free of weeds are a valuable resource, and vigilant monitoring of those sites is time well spent.

Cathy discussed the biology of yellow starthistle and control techniques for various stages, such as cultivation, mulching, burning, mowing, grazing and plant competition. Chemical controls can rapidly eliminate a yellow starthistle stand, but may also eliminate beneficial legumes, so this method may not be advantageous in the long run.

Southern Coast

Production Practices & Sample Costs for Fresh Market South Coast Organic Valencias & Lemons

—Ventura County, February 17

Laura Tourte of the UCD Department of Agricultural & Resource Economics presented her research on production practices and sample costs associated with the fresh market organic lemon and valencia oranges in Ventura County. Several growers who participated in the research project joined the discussion.

Participants were astounded to hear that raising organic valencias is about five times as profitable as raising organic lemons, while the opposite holds true in conventional production. Here is why: Most conventional growers pick lemons green, store them four months or more, then gas them to ripen and sell when cost is high. A fungicide and wax are applied before storage. The storage wax and fungicide is washed off, and a new wax and fungicide applied before sale. Organic lemon growers cannot use fungicides and therefore cannot store the crop as long. They are forced to pick by color, incur much higher picking costs, and have a smaller amount of fruit for sale during highest profit months (summers).

These circumstances apply to coastal lemons, not to desert lem-

ons. Therefore, Ventura County essentially has the whole summer market to itself. Ventura County is one of only places in the world where you can get fresh lemons off trees in the summer. Conventional valencia prices have been down for quite a while, but are quite profitable organically.

Laura's study suggests that many organic production practices are similar to conventional practices, and will be familiar to experienced growers. Experienced organic growers are more likely to report organic production to be less risky than their previous conventional practices, in part because of several distinct marketing advantages enjoyed by organic produce. Much current demand for organic produce goes unfilled, especially in certain export markets, in part due to organic sales expanding at a steady rate of almost 20% annually every year for the past decade, to \$4.2 billion.

Laura mentioned the report, *Organic Agriculture in California: A Statistical Review*, which gives a statewide overview of current opportunities in the organic market. For further information or to obtain copies of any of the studies, contact Laum at (530) 752-9376.

The Big Chill

—Ventura County, January 13

Local meteorologist Terry Schaeffer provides detailed weather and fruit frost reports two times a day to growers in Southern Santa Barbara and Ventura Counties. Growers and citrus packing houses subscribe to this service through the Farm Bureau. Terry's reports are very specific to different districts in the county. He discussed the recent freeze and compared it to other freeze years. Most of Ventura County's citrus was saved from the December freeze by a down valley breeze which raised temperatures dramatically. Terry's graphs showed temperatures dipping into the low twenties for short periods of time, then the breeze would come up and bring it back into the thirties.

Knowledge of how local temperature inversions work play an important role historically in protecting citrus from freezing. Depending on the height of the warm air layer, wind machines and helicopters (used in severe freezes) can be effective some nights and not others. Terry also discussed weather and temperature data from other recent freezes in the different districts of the county.



**Community Alliance
with Family Farmers**

is a membership organization that
depends on your support. Please join us
now. Contact your local Lighthouse Farm
Network meeting coordinator or CAFF's main
office at (530) 756-8518, or fax (530) 756-7857
for more details on the benefits associated
with different levels of membership.

There will be a new San Joaquin County meeting starting in April. Watch your mailbox for details. To be sure you are on the mailing list for this meeting, contact Buss Hill at (209) 604-2767.

San Joaquin Valley
 Modesto: TBA, Contact Kerry Washburn at (209) 227-9977.
 Modesto: Tuesday, April 20, Denny's Restaurant, 1525 McKinley Ave., 7 AM.
 Livingston: Thursday, April 22, Almond Tree Restaurant, 2225 F St., 7 AM.
 Contact Lee Morse at (209) 394-7894 or Gwen Huff at 209/521-4555.
 Livingston: Thursday, April 22, Almond Tree Restaurant, 2225 F St., 7 AM.
 Kingsburg: California Chapin Growers Association Meeting. Everyone is welcome. Thursday, April 8, Kady's Kitchen, 7 AM.
 Contact Fred Swada, 209/632-7705.
 Lindsay: TBA, Contact Andrea Gjerde, (559) 435-0604 (pm).

Southern Central Coast
 Ventura: Agapied Restaurant, 725 So. Victoria Ave., (south of the 120).
 12 noon. Contact Beth von Cheren, (805) 646-1578.
Southern Coast
 Mary Ann Vasconcelos (805) 595-9553
 UCCE Santa Maria, Contact Cathy Darling at (805) 781-5910 or
 Way, 12 noon-1:30 pm. Marketing Strategies with Mark Gaskell.
 San Luis Obispo: Tuesday, April 27, SLO UCCE Auditorium, 2156 Sierra
 Southern Central Coast

Central Coast
 Hollister: Wednesday, April 14, 2 Best Composting Facility, Hwy 25,
 Gilroy, 1-3 pm. Tour of Z-Bar Compost Facility.
 Watsonville: Wednesday, April 21, Cavillo Farms, 420 Hill Rd. (east
 0.7 miles east of Hill Rd. & Hill School). Follow
 signs, 8 AM. Caravan Creek Restoration Tour with Jonathan Buttery.
 RCD, Monterey Co., Daniel Monaghan, USDA-NRCS.
 Salinas: Wednesday, April 28, Denny's Restaurant, 1255 De La Torre,
 Noon-2 pm. Irrigation and Water Management Techniques
 New technologies to get the most for your water, with David Zolotarec,
 Director of the Center for Irrigation Technology, Fresno State Univ.
 Santa Cruz: Thursday, April 29, Aerial Reservoir, 8 AM. Compost Tea
 Machine Design & Foliar Fertilization using Soil Tests as a Guide for
 a Foliar Spray Program, with Carl Kostory, Woodland Farms, Oroville.
 Contact Stan Lomheim, (831) 871-9915 or Kanga Kanga.
 (831) 657-1007 for all Central Coast meetings.

North Coast
 Sonoma: Wednesday, April 14, Farm Bureau Bldg., 970 First Rd., Santa
 Rosa 6:45-9 pm. The Use of Recycled Waste Water in Agriculture.
 Sonoma: Tuesday, April 27, Farm Bureau Bldg., 970 First Rd., Santa
 Rosa. 9:30 am. Workshop on Conservation Easements and Estate Planning
 with Lawrence Jaffe, Lat Field Farm, and others.
 Sonoma: Tuesday, April 27, Farm Bureau Bldg., 970 First Rd., Santa Rosa,
 6:30-9:30 am. Workshop on Conservation Easements and Estate Planning
 to Keep Farmland Active. Contact Keith Absher, (707) 824-0671.
Southern Sacramento Valley
 Yuba: Thursday, April 11, Hartley Farms, 5 of Woodland, off Rd 99,
 between Rd. 77 & Rd. 25A, 10-12 N. Harlan Winter Cover Crop Trial
 Contact: Brian Valt at (530) 756-8518, x23 or Nobby Topler, x29.

Upcoming Lighthouse Farm Network Meetings



Community Alliance with Family Farmers
 P.O. Box 363
 Davis, CA 95617
 RETURN SERVICE REQUESTED

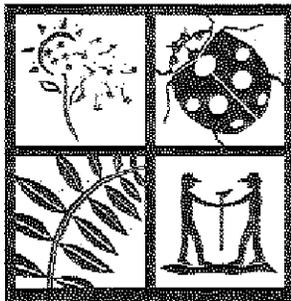
Non-Profit
 Organization
 US Postage
 PAID
 Permit No. 123
 Davis, CA

Ads & Announcements

Organic Farmer: Wanted for 50 acres of green
 veggie, herbs, fruit. 5 yrs. exp. growing
 vegetable crops. Richard, Kauai Organic
 Farms, POB 1122, Hanalei, HI 96714; fax
 808/828-6888; Ph. 808/835-0578.
Olive Trees for sale. Italian varieties; in-
 cluding Frantoio Lecine. 831/728-4269.
Positions & Grants Available for commu-
 nity profit sharing in agri-business, per-
 maculture, edible landscaping, organic
 market garden, sustainable logging, furniture
 building. Old Mill Farm, 707/937-8244
 (inf. Web. main.) or www.wmf.org/clomf.
Independent Monitoring Service for the
 Central Coast. We find what's bugging you. Call
 Lewis & Carlson, 831/728-3199 for brochure.
Wanted: 40-60 acres of orchard land w/
 in 2 hrs. of Sacto. Jerry, 530/622-9289.
Property wanted for a community edu-
 cation center for cultivation & use of me-
 dicinal herbs. \$500 reward. Darren
 Hickie, Living Farmacy, 831/469-8216.

For sale: brush shredder, orchard heat-
 ers, reddy, display cases, 42' refrig. van, '74
 Dodge D-500 refrig. truck, 24'x25' inclined
 reversible belt conveyor, walk-in freezer, juicer
 pressing equip., rotary table slicer. Priced to
 sell. 559/583-8670 after 6 pm.
Position Available: Vineyard/Ranch
 Worker/Manager. FFT. Org. exper help-
 ful! 831/722-0692. S.C. Rodgers or R.
 Repats, R. bar R Ranch, c/o 509
 Westridge Dr., Watsonville, CA 95076.
Job Opportunity: Calif. SAWG. FFT
 Coordinator for policy advocacy, move-
 ment-building & other activities for sus-
 tainable & socially just agriculture.
 SAWG, PO Box 1599, Santa Cruz, CA
 95061; ph: 831/457-2815; fax: 457-
 1003; casawg@fgr.org
Farmstay placements for incl students
 sought. Contact Sally Anders,
 530/792-8230, wis2@psnet,
 www.wisefoundation.com.

The Community Alliance with Family Farmers is a membership-based educational and advocacy nonprofit organization, with chapters throughout California. Our mission is to build a movement of rural and urban people who foster family-scale agriculture that cares for the land, sustains local economies and promotes social justice.



BIOS

Newsletter of the Biologically Integrated Orchard Systems Program
A project of the
Community Alliance with Family Farmers

Winter 1999
Volume 13

update

A "Soft" Approach to Lowering Rejects & Improving Quality

BIOS grower Jim Haag farms 60 acres of Tula, c. Vina and Chandler walnuts in Esparto. Since purchasing the orchard in 1979, he has wanted to avoid the use of organophosphates and, if possible, all other insecticides. However, in certain years his reject levels were high and he wanted to eliminate the economic loss of this damage.



Jim Haag

Still wanting to avoid the use of all insecticides for the 10th straight year, he enrolled in BIOS in 1994 with the hope of using a whole systems approach to reduce insect damage in his orchard.

In 1998, Jim was very pleased with the results he was able to attain. The amount of insect damage, based on his huller gradesheets, was significantly reduced from 10% to 1%. The decline in insect damage improved his walnut quality and he received number one Diamond walnut ratings in all three varieties. According to Jim, his soft approach to improve walnut quality worked this past El Niño year. He attributes his success to the following practices:

Orchard Sanitation - Immediately following harvest, the orchard was hand gleaned twice; following gleanings, all mummy nuts were poled down. Once on the ground, a single pass with a ring roller followed. Orchard sanitation is a cultural practice to help eliminate overwintering navel orangeworm (NOW), a major problem in this orchard.

Blight Sprays - A trio of copper sprays was applied with an electrostatic sprayer at 2 m.p.h. in order to ensure adequate coverage. Blight sprays have never been used two consecutive years in Haag's orchard in order to lessen the chances of developing resistant strains of the blight bacterium. NOW are more likely to enter damaged nuts. Haag's strategy is to apply blight sprays, minimizing the amount of blight-damaged nuts and reducing NOW damage.

Insect Growth Regulator - One application of the insect growth regulator Confirm® was applied approximately 250 degree days after the first codling moth flight. This substance is lethal, causing premature molt in the larval stage of codling moth life cycle.

Beneficial Insect Releases - In cooperation with UC Berkeley entomologist, Nick Mills, two species of beneficial wasps from an area in Central Asia, where walnuts are thought to have originated, were released in his orchard. These wasps have now established in his orchard due to year-round sources of pollen and nectar from his planted cover crop and the perennial insectary shrubs planted on the perimeter of the orchard.

Early Harvest - A helicopter was used to apply Ethephon, a plant growth hormone, to cause uniform early ripening. This allowed for a harvest 10 days early. Early harvest is a cultural practice that minimizes navel orangeworm damage.

Prior to enrolling in BIOS, Jim was using a no-till system, but expressed concerns about low water permeability in his Type II high clay soil. During his first year with BIOS, he planted the low-grow cover crop mix. The presence of the cover crop has somewhat increased the water permeability of his soil. In addition, to account for nitrogen present in the cover crop he has reduced the amount of applied synthetic nitrogen by 25%.

For additional information, Jim Haag can be contacted by telephone at 530-787-3603; his email address is haag@mother.com or you can visit his website at <http://members.tripod.com/HaagFarm/overview.html>.

Almonds
Merced, Stanislaus,
Colusa, Madera and
San Joaquin Counties
Walnuts
Solano and Yolo
Counties

BIOS Staff

Marta Gilbride - Program
Coordinator, Colusa
County Coordinator
Ext. 18

Mark Cary - Merced &
Yuba Counties Almond
Coordinator, Ext. 30

Kerry Washburn
Madera County Almond
Coordinator
209-227-9997

Russ Hill
San Joaquin County
Almond Coordinator
209-537-0926

Miriam Valat
Sacramento Valley Regional
Coordinator, Ext. 29

Max Stevenson (PEP)
Stan. Butte Co. Ext. 25

Molly Espley
Regional Assistant, Ext. 20

Green Hall
Regional Program
Coordinator
209-537-4455

Carla Campbell - BIOS
Program Administrator
Ext. 17

Ames Allison - BIOS
Administrative Assistant
Ext. 19

Pest Management Alliance (PMA) Holds Field Days

Over 100 growers attended the first almond PMA field day, which was held at the Chico State University farm. Growers heard presentations about reduced risk alternatives to dormant organophosphate (OP) sprays. The local ag commissioner, UC IPM staff, Department of Pesticide Regulation (DPR) staff, and Butte County farm advisor Joe Connell all spoke of the need for reducing pesticide runoff and adopting a "whole systems" approach to orchard management. Chris Heinz of the Almond Board of California gave an overview of the scope of the PMA project and what growers will be able to see at the demonstration sites.

A similar meeting was held in Stanislaus County where approximately 150 growers came to hear local farm advisors Roger Duncan and Lonnie Hendricks give presentations focused on alternative practices to the use of dormant OP sprays. UC IPM Area Advisor Walt Bentley discussed winter monitoring guidelines, and Gaty Gliddon of Treevine Consulting provided monitoring information from local farms that hadn't used a dormant spray for several years and still maintained low damage levels at harvest.

Many new faces were present at the meetings and over half of those attending indicated that the information provided would be useful in their own orchards. Look for more PMA field days during the growing season.

BIOS ALMOND PROJECTS

Colusa County

- Marcia Gibbs, Program Coordinator

On January 13th, in Arbuckle, Colusa County almond growers had the opportunity to hear about the problems associated with the use of dormant organophosphate (OP) sprays. Carolyn Pickel, UC IPM Area Advisor shared with the latest on alternatives to the use of dormant OP sprays.

The meeting also emphasized the importance of monitoring. Good monitoring provides information about what pests are present, the impact of beneficial insects on pest populations, and measures overall orchard health. Growers were provided with monitoring guidelines for their orchards.

Results of winter monitoring for the enrolled Colusa County growers was presented. In January, 100 twigs were collected from each orchard block, and then examined for the presence of San Jose scale, parasitized scale, and mite eggs. Monitoring results were then compared with the growers' harvest crackout results to determine what pests had caused their damage at harvest. By making this connection, growers were able to see the practical importance of monitoring in making pest management decisions.

Visits to Colusa County growers will be scheduled in March. The management team will be visiting each of the enrolled growers as well as new growers interested in joining the program. Look for an April cover crop field day!

The *BIOS Update* is a quarterly newsletter of the Community Alliance with Family Farmers (CAFF) BIOS program. The mission of BIOS is to build a community of farmers, other agricultural professionals, and public institutions dedicated to the voluntary adoption of a whole systems approach to farm management that is flexible, maintains long term profitability, and relies less on chemical inputs.

San Joaquin County

- Russ Hill, Project Coordinator

The beginning of the almond season is rapidly approaching, with less than fourteen days left until almond bloom!

Winter orchard management was the topic at the December San Joaquin workshop. Gaty Gliddon gave a presentation on the biology of pests and beneficials in the orchard. Lonnie Hendricks spoke on winter monitoring and orchard sanitation, and Paul Verdegael discussed the importance of pollination and bloom. If you would like information about this interesting field day, please give me a call. Thanks again to the presenters for doing a great job!

On January 29, the management team visited several orchards to update farm plans, make suggestions on orchard management techniques, and field growers' questions. Spring visits to enrolled growers' orchards are being scheduled for March or April. Please contact me if you are interested.

Currently, the management team and I are working on putting together our next workshop, which is scheduled for Tuesday, February 16, 1999 from 10:00AM - 12:30 PM at the Ripon Firehouse. We have invited Mark Finan of Channel 5 News to talk about this year's weather pattern, La Niña. We have also invited Cheryl Norton of Abbott Labs to come and discuss Bt sprays for control of PTB and NOW. We will have a follow-up panel of growers and PCAs discussing bloom sprays. We hope you will plan to attend.

Merced & Stanislaus Counties

- Gwen Huff, Regional Project Coordinator

Greetings, I'm Gwen Huff and I'd like to introduce myself to the CAFF, BIOS and LFN communities as the new Regional Project Coordinator for Merced and Stanislaus counties. I received my degree in agriculture from CSU Fresno. Following graduation, I worked on a few small, organic farms and as a Pest Control Advisor in tree fruit and vines in the Fresno area for three years. I was a Peace Corps volunteer in the West African country of Mauritania, and most recently, I worked in urban pest control in Santa Barbara.

The East Merced Resource Conservation District (EMRCD) has received funding to continue its BIOS activities in Merced County another year. Activities funded by their grant from the EPA Agriculture Initiatives Program include organizing field days and producing a newsletter. This year, they have contracted with CAFF to fulfill the requirements of the grant.

The EMRCD Board is comprised of local landowners who volunteer their time to take responsibility for the oversight and guidance of this and other important conservation programs. I will administer the day-to-day program activities such as assisting the BIOS advisory committee in Merced county, contacting speakers for field days, publicizing events and editing the newsletter.

This arrangement ensures that the EMRCD will have a high-quality program without undue burden on the EMRCD board. Additionally, I will help Lee Moran and Gary Gliddon, CAPP's Lighthouse Farm Network coordinators in Merced and Stanislaus counties, find presenters for their monthly meetings and assist with outreach. I look forward to joining the CAPP team and to meeting the people who participate in these exciting programs.

Madera and Fresno Counties

-Kerry Washinko, Project Coordinator

On December 10 the Madera BIOS project held a field day titled "Honeybees and Pollination." Christian Hunt, from Sierra Ag, discussed supplemental pollen sources. Supplemental pollen can increase pollination if used properly. Some hints that he gave us were:

1. Put bees in a sunny spot so that they warm up earlier in the day. Bees only fly if the temperature is over 50 degrees.
2. Placing the bees up off the ground on picking bins can add 30 minutes of flight time each day.
3. Make sure bees have a water source close by. Bees take care of their water needs before pollinating.

Another speaker was Brian Beekman, a third generation beekeeper. He recommended that for best results, growers should use 2 1/2 hives per acre. Dr. Thomas Bertani spoke about products available through his company, the Pollen Bank. He invented a supplemental pollen dispenser that can be attached to the hive in seconds. The bees must walk through the pollen dispenser before they leave the hive and pollen is sticking to their legs even before they get to a flower.

Eric Mussen, a UC honeybee researcher, told us that fog, rain, winds above 12 m.p.h. and damp blooms all reduce pollen foraging. He also warned growers that honeybees fly up to 4 miles from the hive and can be poisoned by neighbors using insecticides. Currently he is doing research on the effects of fungicides on honey larvae and pupae. He has found that Captan has an affect on these stages and that Rovral may also harm bees.

In addition to these honey bee experts, Mike Buttress from A&L Labs talked about almond fertilization. Mike emphasized that nitrogen uptake by dormant trees is low. If nitrogen is applied prior to or during the dormant period, losses through leaching can be great. Another point he stressed is that nitrates in the water, organic matter in the soil, a cover crop and composting all add nitrogen to the trees. These sources need to be subtracted from the amount of chemical fertilizers that are normally used. Thanks also to Brent Holtz, the Madera County pomology farm advisor, for giving the growers some reminders on winter sanitation.

I have visited some of the Madera BIOS orchards recently to do winter monitoring. While some growers' trees are extremely clean, with less than 2 nuts per tree, others have over 40 per tree. Remember, the best way to control NOW is to get rid of these mummy nuts by reshaking or poling. This should be completed by February 15. The nuts should be chopped or shredded with the mower by March 15.

BIOS WALNUT PROJECT

-Miriam Volat, Southern Sacramento Valley Coordinator

On January 19, 1999, the Biologically Integrated Orchard Systems program and the Lighthouse Farm Network presented an informational meeting on Trusts and Inheritance: Preserving Family Lands. Kathryn Kelly, Executive Director of Yolo Land Trust, and Erik Vink, California Policy Director of American Farmland Trust, discussed tools for insuring the passing of farm lands to the next generation.

Land values in California are rapidly increasing and inheritance taxes can be as high as 50-60% of the appraised value. This can force heirs into the unwanted sale of land to pay federal and state estate taxes. Both Ms. Kelly and Mr. Vink stressed the urgency for landowners to begin planning for the transfer of their estates now.

The primary tools discussed for securing agricultural land from development were agricultural conservation easements. To create an easement, landowners enter into an agreement with a trust agency such as their local land trust, the American Farmland Trust, or the California Oak Foundation. The creation of the trust reduces tax liability and allows the farming operation to continue. The exact agreement depends on the individual farmer and the particular trust organization.

Both the Yolo Land Trust and the American Farmland Trust are nonprofit organizations that promote conservation of agricultural land and open space. Land trusts buy or accept land through donation and are governed by a volunteer board of directors. These organizations help preserve farmland through conservation easements for perpetuity (forever). These easements are essential in preservation of habitat and natural resources by protecting them from the threat of development.

For more information contact American Farmland Trust: (415) 586-4593 or (530) 753-1073, www.farmlandinfo.org; Yolo Land Trust: (530) 795-3110, California Oak Foundation: (510) 763-0282, www.californiaoaks.org, or Miriam Volat, regional coordinator for CAPP: (530) 756-8518 X23.

MONITORING & DOCUMENTATION

-Max Stevenson, Staff Scientist

The Economics of BIOS

Often times when people ask if the BIOS program "works", they want to know the bottom line: is BIOS economically viable? While the income generated from a certain yield and quality of almonds can be calculated relatively easily, the costs incurred in a particular operation can be difficult to determine and varies greatly between orchards. For this reason, in an attempt to help answer this question without the resources to complete an extensive cost comparison, Agricultural Economist Sara Miller and I completed an economic analysis that does not account for the costs, but compares the gross income (not net profit) of BIOS orchards to the county average.

(Continued on back page)



(Continued from page 3)

For this analysis, 1996 and 1997 yield data for nonpareil almonds grown in Stanislaus and Merced counties was used. In order to determine the county average yield in pounds per acre, the total amount of almonds produced each year was divided by the number of acres (by county and variety). The total pounds of almonds is reported by the Almond Board of California (ABC). The ABC also reports the percent damage. The acres of almonds in California is reported by CASS, the California Agricultural Statistics Service. The resulting average pounds per acre includes all producing acreage, whether harvest results were good or bad.

The BIOS harvest results were taken from our BIOS grower survey. All participating BIOS growers are surveyed by telephone each year and asked to provide information about their harvest results and management practices. The harvest results are reported directly from their huller gradesheets and reflect the true financial returns.

Depending on the year and county, along with other assumptions, the income generated from BIOS orchards ranged from \$2,221 per acre to \$3,566 per acre. The difference between BIOS and the county average ranged from \$160 less per acre to \$294 more per acre. Sometimes the difference in income between BIOS and county averages was less than \$12/acre. More details about this economic analysis will be released sometime this summer in the BIOS 1993-98 Five-Year Report.

BIOS for Almonds Guide
The guide is based on the experiences of growers, FCS, and researchers. The cost is \$10, shipping included.

BIOS Reader
The BIOS Reader contains a list of articles organized under several headings: insect, fungal disease and nematode management; cover crop management; nutrient management; earthing; weed management; habitat enhancement; pollination.

Fact sheets available on BIOS practices:

- Establishing a Cover Crop in Almonds and Walnuts
- Chipping and Shredding in Almonds and Walnuts
- Compost Use in Walnuts
- Navel Orangeworm Control in Almonds and Walnuts
- Insectary Shrubs

These fact sheets are available at BIOS Field Days and through the CAFF office.

Learning from the BIOS Approach: A Guide for Community Based Biological Farming Programs
This guide, produced by CAFF and the World Resources Institute (WRI), introduces the principles driving the BIOS program, gives an overview of on-the-ground operations, and identifies lessons learned and challenges faced in implementing a BIOS-style program.

To order publications contact Carla at (530) 756-8518 x15.

PUBLICATIONS

Community Alliance with Family Farmers
P.O. Box 363
Davis, CA 95617
Return Service Requested



Non-Profit Org.
US Postage
A1 D
Permit No. 123
Davis, CA

UPCOMING EVENTS

Yolo and Solano Counties: Tuesday, February 16, 1999 from 8 A.M. - 10 A.M.
Topics: Economics of Alternative Practices, Location TBA.
Contact Miriam Vulet for more information.

San Joaquin County: Tuesday, February 16, 10:00 AM - 12:30 PM, Ripon Firehouse Number 2, Manteca.
Topics: Weather or not to Spray: a discussion on La Nina and the effective use of Bts.
Contact Russ Hill (209) 537-0976 for more information.

Correspondence regarding this publication should be sent to CAFF, P.O. Box 363, Davis, CA 95617.
Telephone: 530-756-8518 Fax: 530-756-7857
Email: bios@caff.org

Community Alliance with Family Farmers is a membership organization that depends on your support. Please join us now! Contact your local BIOS Coordinator or CAFF's main office at (530)756-8518 for more details on the benefits associated with the different levels of membership.